MISSILES

- Where We Stand
- What the Difficulties Are
- What's Ahead

(Page 66)

E B POWER UMIVERSITY MICROFILMS SIS W 1ST ST ANN ARBOR MICH



Photo courtesy Blackman Plastics Company, Culver City, California, and Charles Crowl Company, El Monte, California

Here's the hottest thing in flame-resistant plastics

It's a new plastic alloy and the latest answer to the need for an improved, flame-resistant, rigid plastic sheet for aircraft, automotive and industrial applications.

Among the advantages of this new material are its abilities to be made translucent and considerably lighter in weight than similar materials. It also exhibits greater impact resistance plus higher tensile strength and a high heat-distortion point. And it is post-formable and mechanically workable.

A closely guarded secret is the exact composition of this alloy. But it has been described as a unique combination of vinyl and styrene resins. It also has been revealed that PLIOVIC is the vinyl resin used. PLIOVIC was chosen because of its uniformity, rapid processing and the superior physical properties it imparts to the end product.

Just one of the many uses for the several types of PLIOVIC currently available is flame-resistant sheet. Where can you use them to advantage? For details write to: Goodyear, Chemical Division, Dept. J-9415, Akron 16, Ohio.

GOOD YEAR

PLASTICS

Chemigum, Plioflex, Pliolite, Pliovic-T.M.'s The Goodyear Tire & Rubber Company, Akron, Ohio

CHEMIGUM . PLIOFLEX . PLIOLITE . PLIOVIC . WING-CHEMICALS

IN BUSINESS THIS WEEK October 19, 1957

GENERAL BUSINESS	SPUTNIK HARDENS KREMLIN'S LINE. Red's most effective weapon yet is being used to try to panic Washington and undermine U.S. influence	39
BUSINESS OUTLOOK 35	STILL STANDING PAT ON MISSILES. The Administration's studied calm is goading critics to increasingly frantic calls for action	41
WASHINGTON OUTLOOK 55 INTERNATIONAL OUTLOOK 149 PERSONAL BUSINESS 169	CAUTION IS THE WORD FOR BUSINESS IN '58. In planning for the new year, company economists and their bosses are both guardedly optimistic	42
THE TREND 204 FIGURES OF THE WEEK 2 CHARTS OF THE WEEK 200	THE BEARISH LOOK GETS CLEARER. Wall Streeters this week are definitely saying for the first time that the bears have taken over	44
READERS REPORT 5	NEW DEMANDS ON MONEY MART. Economy drive in Washington shifts more of the financing burden to the banks and investors	45
	FIFTH AVENUE PAYS HOMAGE TO ITS 50-YEAR-OLD GUARDIAN. New York's Fifth Avenue Assn. celebrates its golden anniversary	46
	HIGH COURT RATTLES OFF CASES.	48
	BRITAIN'S ATOMS STAGE A SCARE. Overheated reactor sets off worst nuclear accident yet. Only emergency action averted disaster	50
	IN BUSINESS. News about truckers court victory, peace for a while at Loew's, Astor Plaza troubles, Hamilton's watch deal with Japanese, Asian flu vaccine	52
SPECIAL REPORT	HOW THE U.S. STANDS ON GUIDED MISSILES. How much we have, what the obstacles are, the technical problems.	66
THE DEPARTMENTS		
BUSINESS ABROAD:	in Business Abroad	125
	Will World Boom Turn to Bust? The Warning Flags Are Up	126
	Coffee Keeps Brazilians Awake. The price is far below a year ago	133
CANADA:	Canada Fights Economic Pinch. Business dip and prospect of jobless peak are bringing counter-measures that are likely to have impact in U.S., too	59
FINANCE:	When Insurance and Politics Mix. Massachusetts compulsory auto coverage setup	
	tightens the profit squeeze that besets auto insurance everywhere	111
	Credit Becomes a Key to Car Sales. More and more buyers require financing Commercial Bankers Get a Scolding	117
GOVERNMENT:	In Washington. News about home-planning, antitrust hearings, the Queen's visit, controls over mortgage discounts.	120
INDUSTRIES:	Aerial Mapmakers Speed an Ancient Art. They're mapping the world faster and	
	more accurately, and finding the wealth beneath its surface	96
LABOR:	Auto Layoffs Raise Fewer Howls. Detroit's peaceful "model changeover period"	160
	reflects better management, effects of SUB on long close-downs	153 155
	NLRB Seeks Broader Powers with a former judge at its helm	157
	Hoffa Trips Over a Hurdle. Federal judge delays his taking over as president of	1.00
	Teamsters. This in turn delays suspension action by AFL-CIO	160
MANAGEMENT:	Handy Men With Growing Power. Assistants to the president are multiplying	193
110 11 0 10 20 10 111	In Management	199
MARKETING:	Pinning Dawn Retailing Costs. Dollar-and-cents figures may replace percentages.	134
	U. S. on the Go. Trave! men get figures on U. S. trippers and what draws them Congressional Focus on Food Marketing. New probe is scrutinizing prices	143 144
THE MARKETS:	with a ser in analysis as a summer analysis me assumed alone between one lines one	
	aren't so enticing as they were in 1953	165
PRODUCTION:	Quebec Hints New Iron Ore Bed. Sub rosa activities of U.S. Steel's Canadian	
	subsidiary hints that finds may overshadow Ungava	175
	Direct Reduction of iron ore comes nearer	178
BUSINESS WEEK . Oct. 19, 1957	BUSINESS WEEK is published weekly by McGraw-Hill Publishing Co., Inc., at 99 N. Braadway, Albany 1, N. Y. Enlared as second class mafter Dec. 4, 1936 at the Post Office at Albany, N. Y. under eat of Mar. 3, 1879. Subscriptions 36 a year in U. S. A.	ER 1466

FIGURES OF THE WEEK

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1952 1953 1954 1955 1956	1946	Year	Month	Wook	§ Lat
USINESS WEEK INDEX (chart)	Average	Ago	Ago	Ago	Wee
DOSINESS AAFEN HADEN (charr)	91.6	147.4	143.0	†140.3	*140
ODUCTION					
teel inget (thous, of tons)	1,281 62,880	2,495 96,986	2,101	†2,105 †35,248	2,0 56,5
ngineering const. awards (Eng. News-Rec. 4-wk daily av. in thous.)	\$17,083	\$75,471	\$58,318	\$55,340	\$54.6
lectric power (millions of kilowatt-hours)	4,238	11,300	11,947	11,564	11,7
rude oil and condensate (daily av., thous. of bbls.)	4,751	6,990	6,821	6,812	6,7
ituminous coal (daily av., thous. of tons)	1,745	1,733	1,716	11,709	1,6
aperboard (fons)	167,269	279,692	299,482	298,603	299,9
ADE					
arloadings: miscellaneous and i.e.l. (daily av., thous. of cars)	82	76	69	68	
arlandings: all others (daily av., thous. of cars)	53 90	60	55	55	
epartment store sales index (1947-49 = 100, not seasonally adjusted) usiness failures (Dun & Bradstreet, number)	22	127 259	113 237	130 261	1
ICES					
pet commodities, daily index (Moody's, Dec. 31, 1931 = 100)	311.9	418.0	409.7	392.5	387
adustrial raw materials, daily index (BLS, 1947-49 = 100)	††73.2	97.7	89.6	87.6	8
podstuffs, daily index (BLS, 1947-49 = 100)	1175.4	81.1	84.4	81.8	8
rint cloth (spot and nearby, yd.)	17.5¢	19.4¢	17.8∉	17.7¢	17.
nished steel, index (BLS, 1947-49 = 100)	††76.4	168.6	181.5	1181.8	18
crap steel composite (Iron Age, ton)	\$20.27	\$56.17	\$46.67	\$39.33	\$37.
epper (electrolytic, delivered price, E & MJ, lb.)	14.045∉	39.881∉	26.600¢ \$2.13	26.780¢ \$2.12	26.77
/heat (No. 2, hard and dark hard winter, Kansas City, bu.)	\$1.97 **30.56¢	\$2.29 33.20¢	33.20€	33.41¢	33.4
leel teps (Boston, lb.)	\$1.51	\$1.90	\$2.12	#	#
	41.51	41.70	42.12	77	77
IANCE	17.00	44.77	44.77	40.40	
00 stocks composite, price index (S&P's, 1941-43 = 10)	17.08 3.05%	46.71	44.71	42.42	41.
rime commercial paper, 4 to 6 months, N. Y. City (prevailing rate)	3.03%	3%%	4.73%	4.70%	41/6
NKING (Millions of Dollars)					
emand deposits adjusted, reporting member banks	††45,820	55,289	55,671	54,015	54,3
otal loans and investments, reporting member banks	1171,916	85,338	86,581	87,898	87,2
ommercial and agricultural leans, reporting member banks	119,299	29,833	32,279	32,331	32,1
S. gov't guaranteed obligations held, reporting member banks	††49,879	25,732	24,762	25,654	25,3
otal foderal reserve credit outstanding	23,888	25,707	25,408	25,304	25,5
ONTHLY FIGURES OF THE WEEK		1946 Average	Year Ago	Month Ago	Late
susing starts (in thousands)September.		55.9	93.9	95.0	91
npleyment (in millions)September.		55.2	65.8	66.4	6
nomployment (in millions)September.		2.3	2.3	2.6	
verage weekly earnings in manufacturingSeptember.	*******	\$43.82	\$81.81	\$82.80	\$83.
resonal income (seasonally adjusted, in billions)September.		\$178.0	\$331.1	\$346.8	\$34
rm Income (seasonally adjusted, in billions)September.		\$16.9	\$15.0	\$15.5	\$1:
tall sales (seasonally adjusted, in millions)	*******	\$8,541 ††\$85,577	\$15,865 \$167,154	\$17,030 \$190,539	\$16,7 \$189,2

o Preliminary, work ended October 12, 1957.
† Revised.

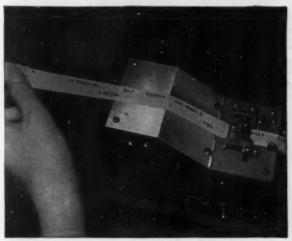
lusufficient trading to establish a price.

† Estimate.
† Ten designated markets, middling \{ in.

⁸ Date for 'Latest Week' on each series on request.

THE PICTURES—Aero Service Corp.—96, 97; Aerolet-General Corp.—66, 78; J. 1. Case International, 3. A.—125; Grant Compton—46, 47 (lt. cen. & bot.); Electronics Associates, Inc.—188; Herb Kratovii—144, 145; Lockheed Aircraft Corp.—72; Ed Nano—185; Robert Phillips—157; Joan Sydlow—47 (top & rt. cen.); U. P.—41 (lt.); U. S. Rubber Co.—199; W. W.—39, 41, (cen. & rt.), 68.

HOW PRIVATE LINE COMMUNICATIONS SERVE AMERICAN INDUSTRY



1. Teletypewriter request from DoALL outlet asks Des Plaines, Ill., warehouse for an item not in local stock.



2. Field order is processed in a matter of minutes at Des Plaines, then passed to warehouse in the same building.



Order is filled from the 15,000-item central stock DoALL maintains in Des Plaines for all sales stores.



4. Shipment is on its way within an average of two hours from the time the teletypewriter request was received.

Bell System service helps put 15,000 products on the shelves of every DoALL sales store

The DoALL Company's 37 sales stores can give customers fast delivery on any one of 15,000 cutting tool and gage items. They simply send a teletypewriter order to a central warehouse, and within two hours the item is on the way.

This Bell System private line service helps DoALL keep local inventories economically low, turnover high. It enables the company to streamline internal order handling...gives sales stores a daily status report on the stock situation.

Modern communications may save days and dollars in your own distribution system. Just call your Bell Telephone Company business office. A representative will study your business, suggest specific ideas. No obligation, of course.

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CHANNELS FOR: REMOTE METERING AND CONTROL • TELEPHOTOGRAPH • CLOSED CIRCUIT TV



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all Predetermining

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in the world. And from this line he can very likely adapt or modify a standard counter to your special needs. This saves cost and time in engineering, purchasing, assembly.

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VEEDER-ROOT INC., Hartford 2, Connecticut



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BUSINESS WEEK . OCTOBER 19, 1957 . NUMBER 1468

BUSINESS WEEK
OCTOBER 19, 1957
NUMBER 1468

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POSTMASTER . . . Please send form 3579 to Business Week, 330 W. 42nd Street, N. Y. 36, N. Y.

READERS REPORT

About Little Rock

... We are curious as to why you call integration [BW-Sep.14'57, p204] (proper name "Mongrelization") of the schools "progress." . . . Why is it "progress" to mix first class white children with fourth class blacks? Lowered standards and increased pregnancies have resulted in Washington schools. . . .

The decision, secured by mongrelists in Washington, and now forced down the throat of the South at "bayonet" point parallels the situation in Hungary where an edict in Moscow forced Communism down Hungary's throat. . . .

Gov. Faubus is a very brave man and greatly to be admired when he exposes this folly in its ugly overtones. . .

G. A. GANTZ

ST. LOUIS. MO.

Dear Sir:

In the Sept. 14, 1957 issue of BUSINESS WEEK the editors wrote on the Arkansas Tragedy. This in my mind is "locking the gate after the horse is stolen." . .

Whether it is right or wrong, the true Southerner was reared with a carefully guided heritage. He was carefully taught how to better and more happily deal with the Southern problem—the Negro. The two races—black and white—in the South are, and have always been, very far apart socially, morally, and, yes, mentally. No one knows how completely true this is unless he has actually lived in the South for a few years. If you have not lived in the South, you are totally ignorant of the facts and it makes no difference how many "Uncle Tom's Cabins" you have read. . . .

We Southerners cannot understand the inhuman pleasure you people-Southern haters, Socialists, and Communists-have in forcing upon us a situation unknown to you. . . .

R. J. MOORHEAD, M. D. YAZOO CITY, MISS.

... I am sure this was written on the spur of the moment without knowing the facts.

The truth of the matter is that the blocking of integration will really take place in Northern cities. You will also find that the real strife and turmoil in the South has been instigated by NAACP leaders. If you will investigate the heads of NAACP you will find they are

Sisters under



For Shopping Centers, Railroad Stations, Drive-Ins and Airports



Butler canopy makes all-weather shopping a reality for supermarkets, counteracts foul weather slumps.



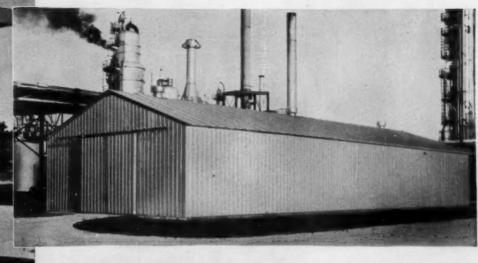
Railroads and airports can save many thousands of dollars in patron shelter costs, with Butler canopy.



Covered drive-in attracts business, even in wet weather. Canopy promotes employee efficiency, service.

the skin

Both created economically from identical Butler structurals and metal panels



Here are two extremes in construction—a sweeping, modernistic service station and a spartan warehouse. Yet, both buildings originated on a production line at one of Butler's factories. Both were built of the same basic materials, cut into the same basic shapes. The difference is merely the way in which standard parts are combined.

These two contrasting buildings illustrate again the remarkable versatility of the Butler Building System—the lowest cost way to build well. Both have all of the advantages that make this method of construction so desirable today: a steel-strong structural and roof system with the fire-safety and life-time durability that only all-metal construction can offer... pre-fitted materials that speed erection and cut construction costs ... pre-planned provisions for easy expansion ... mass-production economy in the original materials.

Only this system can produce quality structures—so economically—in so short a time. And . . . the Butler Building System can be applied to almost any type of one-story construction, from beautiful commercial structures with attention-getting glass fronts and masonry decorative trim, to utilitarian industrial buildings. Find out how Butler can help you build better for less. For details, contact your nearby Butler Builder. He's listed in the Yellow Pages of your telephone directory under "Buildings" or "Steel Buildings."



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New diesel-powered INTERNATIONAL tractors are offered in three models—one single axle and two tandem axle—each with four wheelbases. GCW—68,000 to 76,000 lbs.

Cost records prove International Trucks

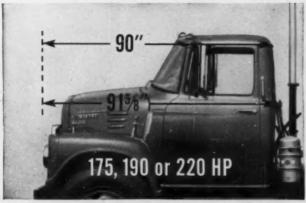
NEW! Short 90-inch BBC dimension

NEW! Heavy-duty diesel power

NEW! Low purchase price

in these

INTERNATIONAL TRUCKS



Choice of three big diesel engines—175, 190 or 220 hp. to performance-match your job exactly.

Bumper-to-back-of-cab dimension is only 90—91% inches and bumperto-front-axle only 26 inches to haul biggest payloads under overall length and bridge formula restrictions.



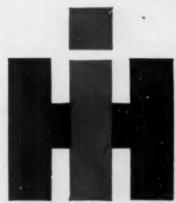
Top of engine and entire left (accessory) side are open for convenient service when insulated engine cover is removed. Access to front of engine is through wide opening hood. Right side of instrument panel is easily removed for increased working area.

Here's the complete answer to the demands of every highway hauler who wants heavy-duty diesel power—new International truck-tractors with up to 220 hp. for top performance anywhere, short 90–91%-inch bumper-to-back-of-cab dimension for top payloads everywhere. And, they are priced right down with the lowest!

You can pull bigger payloads, coast to coast or city to city, re-

gardless of terrain or state restrictions. For example, you can haul 35-foot square front trailers in 45-foot states or 40-foot square front trailers in 50-foot states. You can standardize your fleet with one type and one make truck and still use your present trailer equipment.

For more information on these models AC-225-D, ACF-195-D and ACF-205-D, ask your INTERNATIONAL Dealer or Branch now.



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To keep your company trucks in service the cleaner-burning gasoline. Good Gulf regular grade gasoline available anywhere.



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COMBINATION SCRUBBER-VAC

Cleans Vast-Area Floors
"By the Mile"

Monoxide Eliminator, Powder Dispenser, and Rinse Assembly



Completely
mechanizes scrubbing

Coverage up to 24,400 sq. ft. per hour!

Mounts a SELF-STARTING gasoline engine

This all-in-one cleaning unit, Finnell's 218G Gasoline-Powered Combination Scrubber-Vac, is indeed the answer to today's need for increasing output per man-hour on vast-area scrubbing. The 218G applies the cleanser, scrubs, flushrinses if required, and picks up (damp-dries the floor) – all in one operation! Independence from power lines permits the machine to go wherever the operator guides it... working in and out of production areas with ease...scrubbing continuously.

Maintenance men appreciate the laborsaving features of this unit. The gasoline engine starts quickly and easily by pressing the starter button. And there are no switches to set for fast or slow—slight pressure of the hand on clutch lever adjusts speed to desired rate (up to 136 fpm). Two 18-inch brushes give a 36-inch scrubbing surface. One engine (2 cyl., 4 cycle, up to 10.1 hp maximum, and air-cooled) operates all working parts. The powerful vac performs quietly.

Whatever the area of your floors, find out what you would save with a Combination Scrubber-Vac. Finnell makes self-powered models, gasoline or propane operated, in 18, 30, and 36-inch sizes, and also electric models in sizes to meet specific needs. It's good to know too that a Finnell Floor Specialist and Engineer is nearby to help train your maintenance operators in the proper use of Finnell Equipment and to make periodic check-ups. For demonstration, consultation, or literature, phone or write nearest Finnell Branch or Finnell System, Inc., 3810 East Street, Elkhart, Indiana. Branch Offices in all principal cities of the United States and Canada.

FINNELL SYSTEM, INC.

Originators of Power Scrubbing and Polishing Machines



BRANCHES IN ALL PRINCIPAL mostly Communistic, and many of them belong to the Communist Party.

... we have been sold down the river by the so-called Supreme Court justices, and if their decision is to be accepted as the law, then we might as well burn the original Constitution.

D. D. BUNDRIC

PRESIDENT
MOORE DRY KILN CO.
JACKSONVILLE, FLA.

Dear Sir:

... I must register with you my objection to your editorial

GEORGE H. DIETER CHARLESTON AWNING & METAL CO.,

CHARLESTON HEIGHTS, S. C.

Dear Sir:

I wish to compliment you on your article on Civil Rights, in The Trend [BW—Aug.24'57,p168]. So many people think the business world is only interested in dollars.

GEORGE H. VALENTINE SECRETARY-BUSINESS MANAGER WILBERFORCE UNIVERSITY WILBERFORCE, OHIO

Dear Sir:

Please cancel my subscription. . . . Attached you will find my reason. (The Trend [BW—Sep.14 '57,p204].) Use any unspent portion of my subscription money to start a fund to send the editor down on an educational trip to the South.

E. A. SHAW, JR.

SHAW OXYGEN CO. MONROE, LA.

Head for the Hills

Dear Sir:

The impact of Dachau and Buchenwald carried such a shock that the senses were incapable of registering it. . . .

The same sort of impact was registered by the article, Ads You'll Never See [BW—Sep.21'57,p30].

Himmler and Goebels had, at least, the decency to commit suicide. In the absence of any such display of ethical sense on the part of James M. Vicary, I submit that said gentleman be shot out of hand. I also submit that the firms of Submit had the firms of Submit also submit that the firms of Submit had the firms of Faraged to the ground and salt sown over the places where they stood.

This, of course, won't happen. I predict a happy and prosperous future for Messr. Vicary and his 1984-ish ilk.

But—you stay and watch it. I'm heading with family for Mexico,



The weekly meeting of the executive committee started 15 minutes ago. But already the atmosphere is slightly sticky. The management's figures haven't exactly met with unanimous approval.

What do these figures show? A pretty discouraging profit picture. And the committee considers it's gone on long enough. After all, business is great. But costs keep zooming... while retained earnings dwindle. The boss has got to find a way to plug those profit leaks.

What's the solution? Keysort punchedcard controls! With Keysort's fast, accurate, on time reports you can spot moneylosing operations practically as they happen ... can move at once to tighten scheduling, reduce overtime, shorten your manufacturing cycle. Result: improved value from investment in labor and materials...greater profit from present volume.

Keysort punched cards — speeded by the new Keysort Data Punch which simultaneously imprints and code-punches production or sales information — today offer the most practical, most flexible means of obtaining the fast, accurate, comprehensive reports you need for complete control of your business and profits. Without disrupting your present accounting methods. At remarkably low cost.

The nearby Royal McBee man has a presentation which will show you how it's done. Phone him, or write us.

MCBEE KEYSONT.

Punched-card controls for any business

ROYAL McBEE Corporation, Port Chester, N.Y.

Offices in principal cities. In Canada: The McBee Company, Ltd., 179 Bartley Drive, Toronto 16.

HOW YOU CAN SAVE THOUSANDS OF DOLLARS IN COFFEE-BREAK TIME!

Stop sacrificing 15 working days per employee every year—yet give employees all the benefits of regular coffee-breaks!

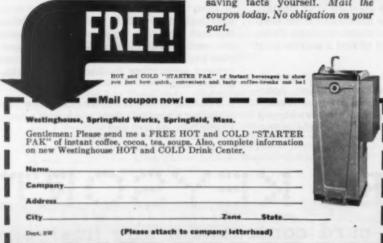
Actual studies show that coffeebreaks are beneficial. However, they do take each employee away from his job the equivalent of 15 full working days a year! Walking to and from the cafeteria and waiting in lines take lots of time—his time and yours to the incredible tune of thousands of dollars every year, even with as few as 20 employees. What to do? Everything's been tried from coffee pots to catering services—but nothing's proved entirely satisfactory till now!

You save! Employees save! The amazing new Westinghouse HOT and COLD Drink Center serves piping hot water for coffee, tea, soups—right on the job! It lets you keep the coffee-break under control at all times—yet gives your employees a refreshing lift! It saves your company not hundreds but thousands of dollars in coffee-break time annually... while sav-

ing your employees 4\$ on every cup they drink!

Talk about convenience! The Westinghouse HOT and COLD makes hot drinks available to everyone instantly! No more going out or sending out for coffee. No more making up lists or cleaning hot plates and coffee makers or bothering with an expensive catering service. Employees really like having their own Hot Drink Center so handy. And it serves all the refreshing cold drinking water they want, too—yet takes up only 14 inches square of floor space!

Get the complete money-saving story! The coffee-break problem has already been solved for employers in every type of business, both big and little—thanks to the new Westinghouse HOTand COLD Drink Center. They say it's the only practical way to control the coffee-break with employee approval. But, get all the moneysaving facts yourself. Mail the coupon today. No obligation on your part.



where some shreds of sanity and self-respect still exist.

ALEX APOSTOLIDES
INDUSTRIAL ART & ENGINEERING CO.
LOS ANGELES, CALIF.

Wrong Figures

Dear Sir:

In your article, Time for Economic About-Face? [BW—Oct.5'57,p39], you say that unemployment now is at 3.8-million and that in 1954 it averaged 5-million. But the September issue of Economic Indicators puts unemployment in August, 1957, at 3.8% of the civilian labor force and shows that in 1954 it averaged 5%. Have you not made a mistake?

M. LOUISE CURLEY

ECONOMIST, SCUDDER, STEVENS & CLARK NEW YORK, N. Y.

 Yes, we have. Unemployment in August, 1957, was 2.6-million and in 1954 averaged 3.2-million—or 3.8% and 5% of the civilian labor force, respectively.

Not on the Map

Dear Sir:

We were especially interested in your . . . spread . . . depicting the proposed Federal Interstate Highway system [BW—Sep.21'57,p30].

Our disappointment is keen in that your map-maker failed to identify Savannah which has been designated a control point on the Interstate System for the north-south Route 95 and the east-west Route 16, both shown on the map.

Savannah is Georgia's second largest city and the 12th ranking port in the nation. While we realize that it would be impossible to show every major city on the proposed system, we are unhappy about the omission of Savannah. . . .

I. A. METZ, JR.

EXECUTIVE DIRECTOR
SAVANNAH CHAMBER OF COMMERCE
SAVANNAH, GA.

Dear Sir:

Your map and article on page 31 of your Sept. 21, 1957 issue is further proof that Texas certainly has good sales promotion. Did you ever notice that highway Route 75 does not go through Texas and yet you have Texas printed on the picture of the new route marker?

LEO J. T. BROM THE BROM MACHINE & FOUNDRY CO. WINONA, MINN.

 We printed a picture of a sample marker.

WHEN THE GOING'S TOUGH...

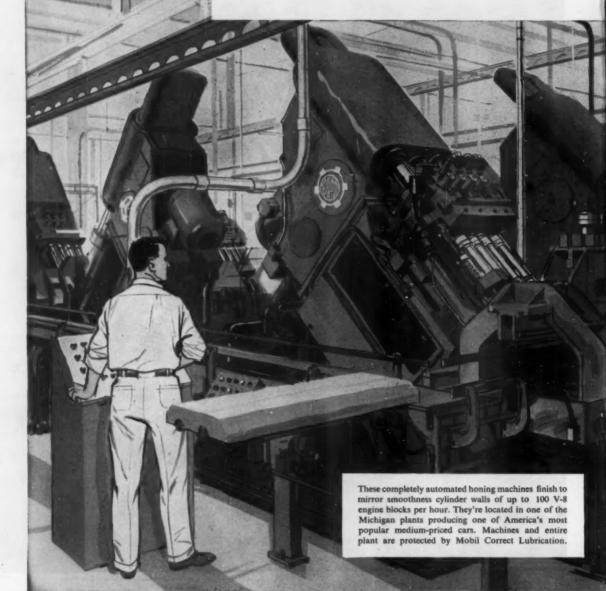
PUT
GRADALL
ON THE JOB!

Distributors in over 75 principal cities in the United States and Canada

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Correct Lubrication in Action . . .

2000 Machine





SOCONY MOBIL

Leader in Lubrication for over 91 years

in the Automotive Industry

Production Hours Saved

6000 REPAIR MAN-HOURS ELIMINATED!

Two of many cost-cutting benefits achieved by this leading automobile company with the help of Socony Mobil

The machines used to produce this automobile company's V-8 engines are so complex and closely interlocked that the failure of one small part may result in the shutdown of an entire production line.

That's why company management recommended the adoption of a planned lubrication program . . . decided on the depth of service offered by Socony Mobil Correct Lubrication. Under this comprehensive program, plant personnel and Mobil engineers coordinated their efforts so effectively that the size and number of maintenance savings have significantly added to company profits.

To cite one example—After surveying 650 hydrau-

lically operated machines in this company's axle and motor plants, Mobil engineers noted use of 8 different hydraulic oils. Their varying performance caused excessive downtime, constant repairs, short oil batch life. Minor machine modifications suggested by Mobil engineers permitted use of a *single* wide-range high quality Mobil hydraulic oil. In just two years, this change made available 2000 additional production hours . . . eliminated 6000 repair man-hours . . . saved 10000 gallons of oil.

Here's another example of Correct Lubrication in action...proof that it can pay to rely on Socony Mobil.

More Savings-made with the help of Socony Mobil Correct Lubrication

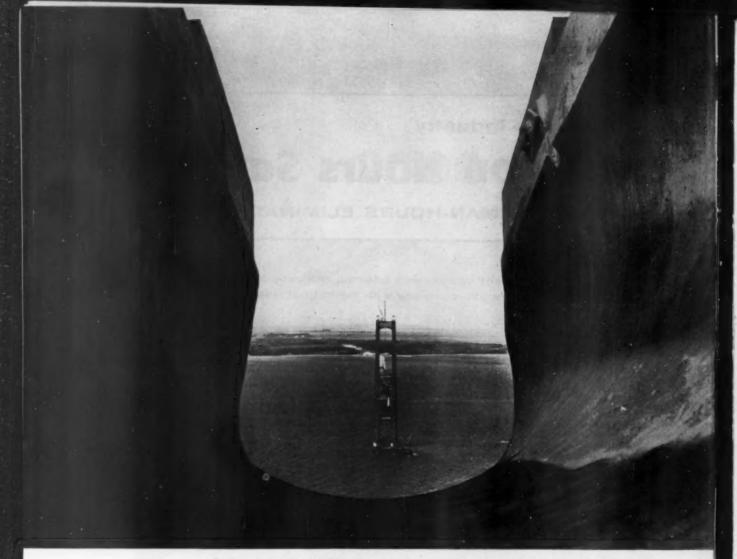
This chart gives some idea of the extent and size of savings achieved through the knowledge, service,

facilities and quality products available through Mobil Correct Lubrication.

	Machine Production Hours Saved	Machine Repair Man-Hours Saved	Repair Parts Saving	Savings Period
Hydraulic Systems	2000	6000	Not Recorded	1953-55
Trio Nut Runners	138	276	\$1610.	1952-55
Air Wrenches (Motor Assembly)	Not Recorded	188	Not Recorded	1952-55
Bullard Chucks	82	328	Not Recorded	1952-55
Landis Wheel Dresser Bearings	Not Recorded	Not Recorded	871/2%	1952-55
Keller Air Hoist	Not Recorded	276	\$8970.	1952-55
Ex-Cell-O Cylinder Boring Machines	100	800	\$8750.	1952-55

Correct Lubrication

A proved program to reduce equipment maintenance costs



Designed to support a 24-inch main cable at 552 feet above the Straits of Mackinac, the inside of this mammoth 35-ton Blaw-Knox cast steel tower saddle also provides a dramatic view of the other main tower of the longest suspension bridge in the world

BLAW-KNOX makes what it takes

-to support huge cables atop skyscraper towers

When completed, the new 5-mile-long Mackinac Bridge will link Michigan's upper and lower peninsulas across the Straits of Mackinac. On top of the two main towers of the 8,614 foot suspension portion of the bridge, two 70,000 pound cast steel tower saddles will support huge 24 inch cables—a vital function, especially when the structure may be subjected to winds over 120 miles per hour.

But these large tower saddles are only four of the 72 Blaw-Knox steel castings that are important structural parts of this tremendous bridge. And there are Blaw-Knox steel castings on many other well-known bridges, such as the recently completed New York Thruway Bridge across the Hudson River and the new Edgely-Florence Bridge which spans the Delaware River.

Such castings are typical of the custom-designed products Blaw-Knox makes for the construction industry—and for the metals, public utilities, chemical processing and other industries. For an informative look at our many products and services, write for your copy of "This is Blaw-Knox."



BLAW-KNOX COMPANY

1201 Blaw-Knox Building • 300 Sixth Avenue Pittsburgh 22, Pennsylvania



... that's why Bambergers installed Johns-Manville Permacoustic® Ceilings

Even during the busy rush hours in Bamberger's new store at Garden State Plaza, Paramus, N. J., customers—and sales personnel—relax in an atmosphere of store quietness. Over 200,000 square feet of Permacoustic Ceiling was installed in Bamberger's modern shopping center.

Johns-Manville Permacoustic Ceilings absorb the store traffic noise, the clatter of merchandise, the bustle of customers and sales staff. In stores, banks, offices, schools, etc., the textured finish of a Permacoustic Ceiling is a decorative accent in architectural design. These acoustical ceilings are easily incorporated with both modern and conventional techniques in lighting.

Because Permacoustic is made of mineral wool, noncombustible fibres, you reduce fire hazard too.

Take advantage of the services of J-M's staff of acoustical engineers,

located in the principal cities. They will gladly make analyses and give recommendations on acoustical ceilings for new construction projects or modernization jobs.

For a free copy of booklet "Sound Control," write Johns-Manville, Box 158, New York 16, N. Y. In Canada, write 565 Lakeshore Road East, Port Credit, Ontario.





Johns-Manville



THESE & FEATURES MAKE NEW R & M ARMATURES OUTSTANDING

All coils are wound simultaneously. Coils are exactly identical, assuring identical electrical and physical characteristics. Conventional methods produce windings with individual coils having varying amounts of wire and consequent non-symmetry.

Armature coils are uniformly positioned and anchored securely. Interlocked winding pattern resists conductor and coil end movement. This unique construction minimizes abrasion of wire insulation, a common cause of high speed armature failure.

Maximum coil end exposure resulting from distinctive winding pattern permits maximum heat dissipation. Lower temperatures prolong armature life.

More uniform electrical characteristics reduce arcing at brushes, improving commutation and prolonging brush life.



ROBBINS & M











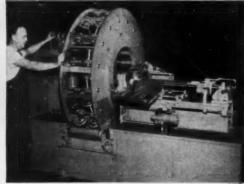


R&M PRECISION MACHINE-WOUND ARMATURES

can improve your product's performance!

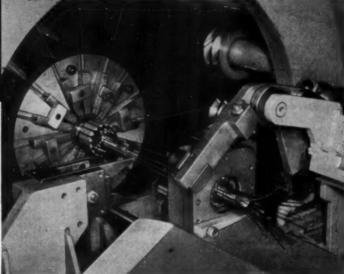
A new basic development in armature winding technique, perfected by Robbins & Myers, now produces armatures for Universal or Series Motors which are superior to those heretofore available for original equipment manufacturing. The new R & M armature winding machine winds all coils simultaneously . . . uniformly positions them . . . and the coils are physically and electrically identical! Weaknesses inherent in armatures wound by conventional methods are eliminated. The new R & M machine produces armatures of finer, more uniform construction which will give longer, more dependable service!

Contact a Robbins & Myers representative for additional details on R & M
universal motors and series motor parts
or write for Bulletins 444-BZ and 445-BZ.



AUTOMATION AT R & M SPEEDS ARMATURE WINDING AND IMPROVES ELECTRICAL AND PHYSICAL QUALITIES OF PRODUCT.





For whatever you make ...

N-A-X FINEGRAIN STEEL DELIVERS STRENGTH WITH TOUGHNESS



No more dramatic test of a steel's combined strength and toughness could be devised than the kind of job performance which Caterpillar Tractor Co. builds into its products.

As Caterpillar equipment literally moves the earth, bull-dozer blade surfaces and scraper bowl bottoms must stand up to gruelling punishment. In these critical components, Caterpillar standards for steel are of the highest. N-A-X FINEGRAIN steel meets those standards with the right combination of strength with toughness.

And to this manufacturing operation, like so many others, N-A-X FINEGRAIN brings other important benefits as well. For example, the excellent weldability of N-A-X FINEGRAIN steel makes it exceptionally adaptable to Caterpillar's exacting requirements.

Review these salient advantages for your job: N-A-X FINEGRAIN steel, compared with carbon structural grades,

is approximately 50% stronger • has high fatigue life with great toughness • is cold formed readily into difficult stampings • is stable against aging • has greater resistance to abrasion • is readily welded by any process • offers greater paint adhesion • polishes to a high luster at minimum cost. And the physical properties of N-A-X FINEGRAIN are inherent in the "as rolled" condition. N-A-X FINEGRAIN'S resistance to normal atmospheric corrosion is twice that of carbon structural steel.

NOTE: Where greater resistance to extreme atmospheric corrosion is an important factor, our N-A-X HIGH-TENSILE is recommended.

For whatever you make, from tractors to pressure cylinders, with N-A-X HIGH-STRENGTH steels you can design longer life, and/or less weight and economy into your products.



This bowl bottom assembly of the Caterpillar No. 470 Scraper requires numerous individual welding operations in its manufacture. Not only the parent metal, but the welds themselves, must have strength with toughness. Again, N-A-X FINEGRAIN steel proves its excellent weldability.



Here Caterpillar Earthmoving Equipment pushes America's great highway program forward. A Cat® DW 21 and matching No. 470 Scraper lead the way. The Cat DW 21 is assisted by a Caterpillar-built crawler Tractor.



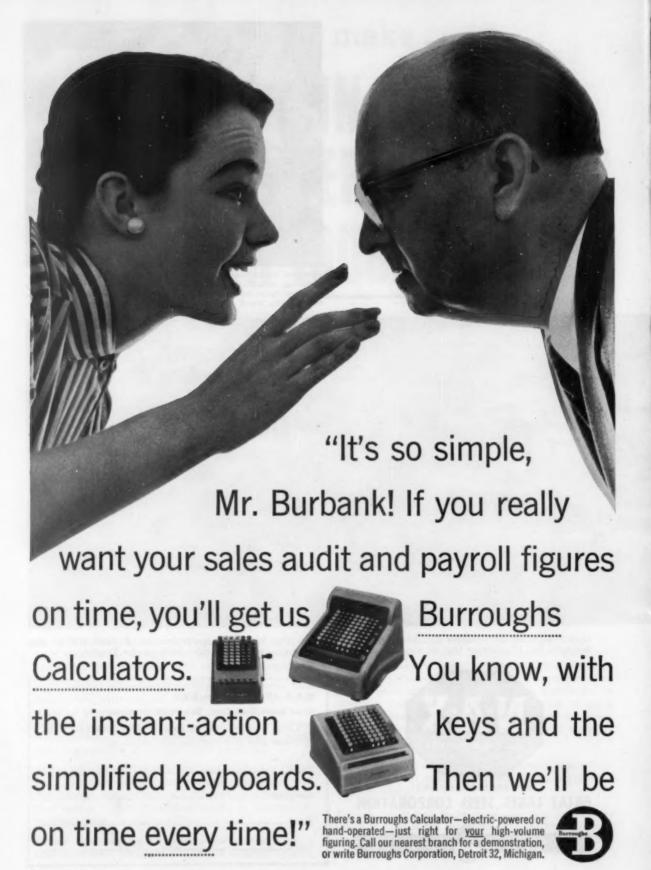
N-A-X Alley Division, Dept. BW-9

GREAT LAKES STEEL CORPORATION

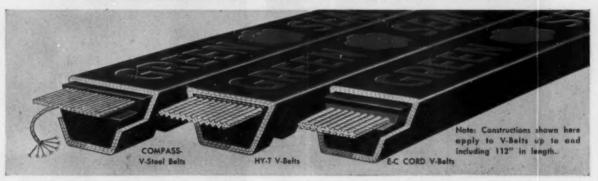
Detroit 29, Michigan . Division of

NATIONAL STEEL CORPORATION

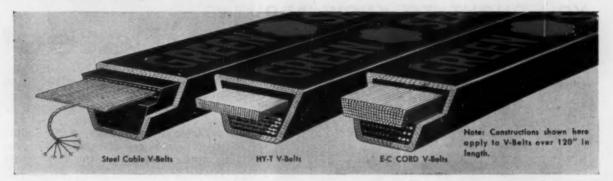
N-A-X Alloy Div.,	Dept. BW-9
Great Lakes Steel	Corp., Detroit 29, Michigan
☐ Please send me	technical data on N-A-X FINEGRAIN steel.
Please have you	r representative contact me.
Name	Title
Company	
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What's different about



V-Belts with the Green Seal?



Plenty—when you're belting multiple drives. For that Green Seal certifies the dimensional stability of every belt that carries it. There's no surer guarantee that every belt in a set will match every other one—perfectly. And that they'll stay matched no matter how long you stock them before installation.

So the dimensional stability of Green Seal belts is solid protection against "loafing," slipping, stretching, scorching and other mismatching troubles. And most of the credit belongs to the belts' load carriers of airplane-type steel cables or Triple-Tempered (3-T) cord — Goodyear "exclusive" cord that's carefully tempered with Tension, Temperature and Time.

This unique 3-T process brings the synthetic cord to its point of greatest strength and stability. Result: the end of shrinkage in storage—plus greatest shock- and stretch-resistance in use. All of which assures you maximum, trouble-free horsepower hours at minimum cost. Why settle for less?

GREEN SEAL by GOOD SYEAR

	The Goodyear Tire & Rubber Company, Dept. 794, Akron 16, Ohio
Please send me complete	information on what makes V-Belts with the Green Seal different from any others made today.
Name	
Company	

THE GREATEST NAME IN RUBBER

How we work steel to make steel work for you



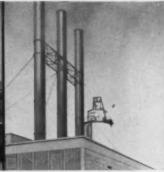
TODAY, A. O. Smith Permaglas water heaters, proved in more than 3,500,000 homes, set new standards of life expectancy.



TODAY, Permaglas offers the best in 4-season air conditioning — with ceramic-coated heat exchangers promoting efficiency.



TODAY, A. O. Smith Harvestores revolutionize farm feed processing; Permaglas mechanized storage solves industry's bulk materials-handling problems.



TODAY, the high cost of smokestack rust-thru is being solved by *Permaglas* stacks that shrug off condensate corrosion.

YOU OUGHT TO KNOW ABOUT

glass-protected steel

Today's products forecast tomorrow's promise; the possibilities are infinite

The world's most useful metal acquired vital new dimensions since A. O. Smith perfected methods for protecting steel with glass.

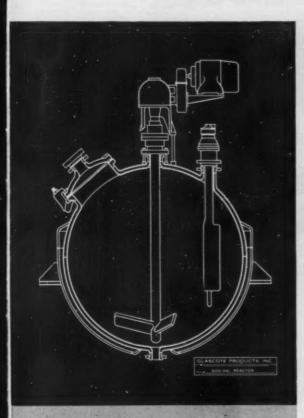
New dimensions indeed! With an inventory of more than 3000 glass formulations, A. O. Smith can produce coatings for steel that shrug off all kinds of corrosive attack...solve problems involving abrasion, contamination and catalytic action. The marriage of glass and steel is a permanent fusion bond — won't separate until the yield point of the metal itself has been exceeded.

Now available to all industry, A. O. Smith's specialized resources are being used by many manufacturers, planning for the future with glass-protected steel.

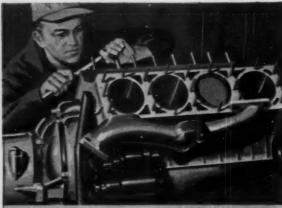


TOMORROW, the aircraft that fly at speeds beyond any known today will quite possibly wear slick, insulating outercoats of glass. Purpose — to reduce the heat produced

by air friction (what airmen call the thermal barrier). This too is a research project inspired by A. O. Smith's unique ability to protect steel with glass.



NOW, approved for production at A. O. Smith's Glascote subsidiary — world's first spherical, glass-lined chemical processing reactor. Designed for severe corrosive service, the unit withstands far higher operating pressures than conventional cylindrical designs.



TOMORROW, the engine of your car may well have cylinder walls and piston rings lined with glass. Just one of the creative possibilities being studied by industry today.

TOMORROW, farmers may turn the earth with plowshares of glass-protected steel. The anti-abrasive character of A. O. Smith glass coatings could well be the answer to the problem of wear and tear in agricultural implements.





A. O. Smith is the world's largest manufacturer of glassprotected steel products. Want more facts about our own glass-coated linest Or, about our ability to produce for yout Write for free Bulletin No. 1-20.



a better way

50

A.O. Smith

MILWAUKEE 1, WISCONSIN

... where creative skill with steel serves you through better products and processes for home, farm, industry and government. International Division. Milwaukee I, Wisconsin



3-minute check-out for jets

One of these days a sleek jet aircraft will roll up to the ramp and take off—completely flight-tested in only 3 minutes!

We've already produced test equipment for prelaunching check-out of guided missiles. Application of this test system to jets is simply a matter of engineering.

Today, even with the finest equipment and most skilled technicians, pre-flight testing of jets is a long, complex business. But our system, by taking full advantage of the new dimension of automation, can get the job done completely and accurately in 3 minutes.

Our equipment will be compact and mobile—utilizing the latest digital and analog controls. On the "brain center" is set up a program of tests and the answers desired to indicate that the aircraft is flight-worthy.

Here's the procedure for testing:

Meet the plane at the ramp. Connect the equipment to a special outlet on the ship. Start the system and let it run. Automatic evaluation of the responses received comes out in the form of visual data—and adds up to either "All set" or "Hold everything."

This is the sort of ingenuity that's stock in trade at Stromberg-Carlson. It already has been put to business uses, too. Perhaps you have a problem such engineering skills can solve.

"There is nothing finer than a Stromberg-Carlson"



STROMBERG-CARLSON

DIVISION OF GENERAL DYNAMICS CORPORATION

anoral Offices and Factories at Rochester, N. Y.—West Goast plants at San Biego and Los Angeles, Cali



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so much industry prefers to locate in

DEBT-FREE INDIANA

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DEBT-FREE!

OTHER State and Local Governments are

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(up 200% in 10 years)

NO manufacturer's tax

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INDIANA'S CONSTITUTION

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IN INDIANA ...

New Industries DON'T pay yesterday's bills!

INDIANA'S "Right-to-Work" Law

IS THE FIRST ENACTED BY A MAJOR INDUSTRIAL STATE NO corporation tax

NO penalty tax

NO "use" tax

NO sales tax

NO "nuisance" tax

ONLY 1

Indiana Tax-Rate Increase in 26 years

(AND NO MORE CONTEMPLATED)

INDIANA IS NOW THE CENTER OF almost EVERYTHING

PEOPLE WITHIN 575-MI RADINE CENTER OF AMERICAN MARKET

PERMITTERANCE CENTER OF U. S. MANUFACTURING

INDIANA is literally the "CROSSROADS of the NATION"

IN INDIANA YOU CAN'T BE MORE THAN 25 MILES FROM A COLLEGE!

60 COLLEGES. UNIVERSITIES

and Extension Centers ... including top-ranked engineering schools

"PROOF of the PUDDING"

is Industry's RESPONSE to "The Indiana Story

7 NEW PLANTS A MONTH IN INDIANA April '55 - May '57

and 10 A MONTH for the past year

and ONLY 1 PLANT HAS LEFT INDIANA ... FOR EVERY 100 WHICH HAVE COME IN INDIANA IS

ST AREA

NEW-PLANT BUILDING

On a per capita basis: INDIANA OUTRANKS THE STATES WHICH ADD THE LARGEST TOTAL VALUE TO GOODS BY MANUFACTURE

When YOU plan a plant Remember

> DEBT-FREE INDIANA



VIA JEFFREY SELT CONVEYORS AND OVERHEAD SHUTTLE CONVEYORS clinker is placed in huge open storage pile at Huron-Portland Cement Company, Alpena, Michigan.



A JEFFREY VIBRATING FEEDER similar to this is part of system by which clinker is withdrawn by tunnel conveyor and returned to proportioning building.



"Wide-angle view adds depth to expansion picture"

ROBERT C. McDOWELL, PRESIDENT McDOWELL COMPANY, INC. CLEVELAND, OHIO, SAYS:

"When a consulting organization focuses its creative abilities and broad engineering experience on your production setup, they approach it with wide-angle vision. A group like ours, working constantly with industries which are growing, views your operations from a special vantage point. Depth is added to your expansion picture by taking knowledge and stimulus gained in another industry and applying them to planning and constructing more efficient facilities for you."

Expansion at the Huron-Portland Cement Company, Alpena, Michigan, has raised annual capacity of the world's largest cement mill to 12 million barrels of portland cement. Total increase is equivalent to adding 3 average-size cement mills to the nation's capacity.

An entirely new system of clinker storage was devised to match new outputs. Stockpiling by belt conveyor into open storage and reclamation by tunnel belt conveyor was a major factor in stepping up capacities and effecting economies in material handling.

Jeffrey belt conveyors, installed by McDowell Company, Inc., replace the overhead cranes and bulldozers used in old storage areas.

It pays to team up with a top-flight engineering company familiar with a wide range of applicable equipment and able to specify products that assure efficient, uninterrupted production in your plant. For details regarding any of our products, get in touch with The Jeffrey Manufacturing Company, 960 North Fourth Street, Columbus 16, Ohio.

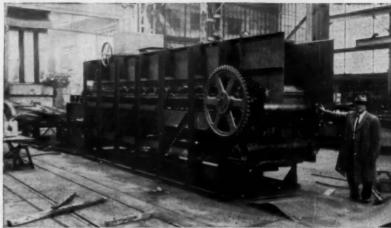
CONVEYING • PROCESSING • MINING EQUIPMENT...

TRANSMISSION MACHINERY...CONTRACT MANUFACTURING

Founded in 1877







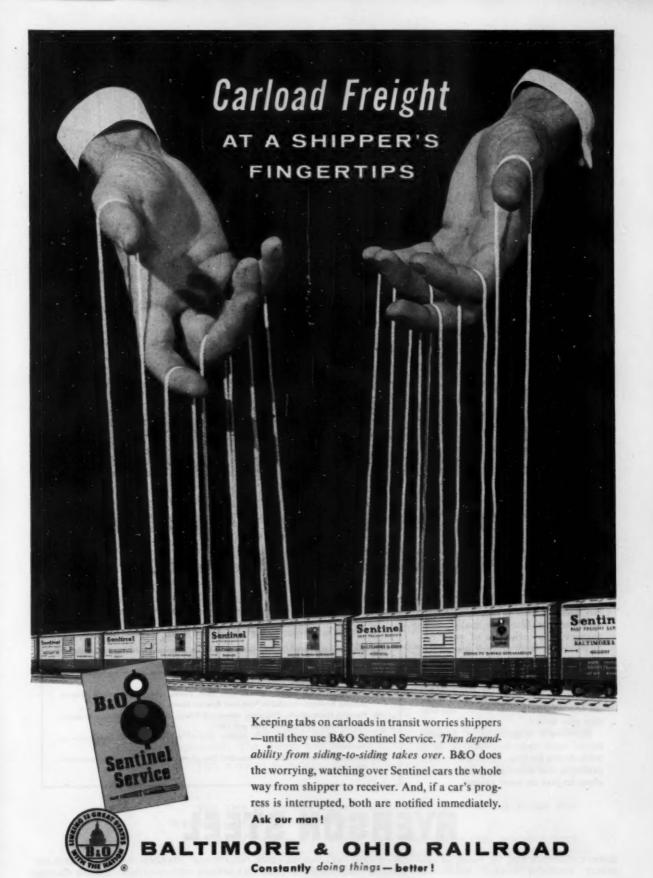
JEFFREY APRON FEEDER (with dribble collecting belt) ready for shipment. This unit was specified for an important bauxite handling operation in a recent aluminum plant expansion engineered by McDowell Company, Inc.

TWO MILES OF CONVEYOR BELTING is involved in material handling system at world's largest cement mill... provides for storage of 2 million barrels of clinker. Aerial view shows system under construction.

In building maintenance, "you can't buy experience by the gallon." The trained inspection, diagnosis and recommendations of the Tremco Man, plus application instruction on the job, assure economy and satisfaction... whether the work is done by a contractor or by your own maintenance crew. Are you taking advantage of the Tremco Man's experience?

THE TREMCO MANUFACTURING CO., CLEVELAND 4, OHIO,
THE TREMCO MANUFACTURING CO. (CANADA) LIMITED, TORONTO, ONTARIO







Tighten steel inventory control with Ryerson immediate service

No need to miss your steel inventory targets. You can make more conservative estimates of your requirements, with greater assurance of safety, when you rely on Ryerson.

Every kind of steel, every shape and size is available from the world's largest stocks—ready for shipment on the schedule you set... on the day you select.

Ryerson's large staff of experienced steel men is ready to help with steel selection, application suggestions, and scheduling. They're as close to you as your phone.

GET WHAT YOU WANT WHERE YOU WANT IT-AND ON TIME!

- Steel from stock. Carbon steels, alloy steels, stainless—bars, structurals, plates, sheets, strip and tubing.
- Fabricated construction steel. Re-bars and accessories, spirals, wire fabric, bar ioists, structural steels.
- Aluminum from stock. Sheets, coils, bars, plates, tubing, architectural shapes, building products—available from most Ryerson plants.
- Plastics from stock. PVC pipe, volves and fittings, sheets and rods, rigid Kralastic pipe, flexible polyethylene pipe and tubing.
- Flame-cut steel shapes. In carbon, alloy or stainless steel. A single piece or thousands.
- Machinery and teels. The broadest line of metalworking equipment available from a single source.

RYERSON STEEL

JOSEPH T. RYERSON & SON, INC. PLANTS AT: NEW YORK - BOSTON - WALLINGFORD, CONN. - PHILADELPHIA - CHARLOTTE - CINCINNATI - CLEVELAND
DETROIT - PITTSBURGH - BUFFALO - INDIANAPOLIS - CHICAGO - MILWAUKEE - ST. LOUIS - LOS ANGELES - SAN FRANCISCO - SPOKANE - SEATTLE

BUSINESS OUTLOOK

BUSINESS WEEK OCT. 19, 1957



Failure of the fall upturn to develop any real vigor (BW-Oct.5'57, p35) now is being confirmed by the big figures that measure the economy:

- Employment and personal income in September were a bit below August.
 - · Production, allowing for seasonal factors, also was down a shade.
- Retail sales sagged from the exceptional dollar volume of July and August (though staying substantially ahead of a year ago).

Industrial production is placed at 144 (or 44% above the 1947-49 average) by the Federal Reserve Board's preliminary index for September.

That's unchanged from the June and July rate, but it's down a point from August, which has been revised upward to 145. Moreover, September failed to show any year-to-year gain.

Production of nondurable goods provides such strength as is to be found in the manufacturing industries for September.

The Federal Reserve's report on last month's output sets softgoods at a new high of 132. Earlier months this year were in the 130-131 range.

Hardgoods manufacturers, for their part, seem to be adjusting their operations gradually to the slackening rate of incoming orders.

The index for their output, after seasonal adjustment, slipped 3 points below the 162 level that had held for the preceding three months. And it fell behind 1956 for the first time this year.

Machinery producers, particularly in the nonelectrical category, are trimming sail; they have trailed 1956 for two months now.

Total employment, at the time of last month's nose count, fell short of the year-earlier level for the first time in a long while (as well as failing to show its usual seasonal gain from August to September).

The shortfall of 150,000 probably isn't important in itself. A statistical error of that size easily could creep into figures adding up almost to 66-million. But it does interrupt the long string of new monthly highs.

The slippage, by the way, can be blamed on farming where bad weather at the time of the Census Bureau's count was holding back the harvest; non-agricultural employment went up to another of its new monthly highs.

Tending to prove that there is little in the labor market to become alarmed about, unemployment declined very slightly between August and September. The jobless totaled a little less than 2.6-million.

This is about a quarter million above last year's very low figure.

You have to dig into manufacturing employment to find trends that may just possibly be worth worrying about.

Factories have been providing fewer jobs than a year ago ever since July. And not only that: They dropped about 50,000 workers off their payrolls during September when the seasonal trend should have been up.

BUSINESS OUTLOOK (Continued)

BUSINESS WEEK OCT. 19, 1957 Last month's dip was confined to plants turning out hardgoods; nondurable goods industries had about the normal rise for the time of year.

It's easy to blame most of the decline in manufacturing employment on the auto industry and its model change. The fact is, though, that this can't have much to do with the year-to-year decline, for auto output last month was about 40% larger than in 1956.

Hours of employment in manufacturing were below 1956 in September, just as they have been each month for the year to date. This, in combination with slightly fewer jobs, had its impact on payrolls.

However, higher hourly rates more than offset the shorter work week, with an average \$83.20 weekly wage, about 40¢ higher than August.

Weekly pay, incidentally, was \$1.40 better than a year earlier.

September's small decline in personal income is another trend-interrupter—the first month this year to fail to show a gain.

At the same time, it might be noted that August's gain was about cut in half on revision. Thus personal income, running at an annual rate of \$346½-billion in September, was very little higher than in July.

We also have a sharp decline in the year-to-year rate of gain: This year's advantage was better than 6% in July; now it's not quite 4.7%.

The dip from August to September in retail sales volume might easily be blamed on the slowdown in personal income. But the truth of the matter is that this kind of thing just doesn't show up so quickly.

Short-run changes in personal income or minor shifts in the labor market aren't enough to change mass spending attitudes.

The easiest way to explain slightly disappointing retail sales in September is to assume that last month was hurt to some extent by the extraordinarily high volume of July and August.

Retailers of all sorts took in better than \$16.7-billion last month, according to the Commerce Dept.'s flash report.

This, seasonally adjusted, was about \$300-million under July-August.

Nevertheless, last month was nearly 5½% ahead of a year ago. And if you take the third quarter as a whole (which probably is fairer considering the early Labor Day), you find it a good 6% above last year.

That's the same rate of gain as earlier quarters this year. And, if it is maintained, we are going to rack up our first \$200-billion year.

Unquestionably the sag in retail sales last month caught more eyes than would normally have been the case because everyone is saying that the shape of 1958 business is up to the consumer.

Thus if it should develop that September contained a clue to flattening out of retail volume, this would be an ill omen for next year.

There is grave danger, however, in reading too much into relatively small changes in massive figures. The mere matter of month-to-month revision can change what looked like a trend into a mere aberration.



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Sputnik Hardens Kremlin's Line

Khrushchev (picture) is using Russia's most effective weapon yet to try to panic Washington and undermine U.S. influence throughout the non-Communist world.

The West has been reeling since early this month under the impact of Sputnik, with its revelation of the Soviet missile lead and the changed power balance in the world. Adding to the shock felt by every Western capital have been several Hitler-like blasts at the U.S. from Communist boss Nikita Khrushchev, threatening war in the Middle East.

It took Washington until this week to catch its breath and start sizing things up. The White House and most of the Cabinet insist that nothing has happened that calls for any significant policy shifts on defense spending (page 41).

But even now, there seems to be some difference of opinion in Pres. Eisenhower's official family. Special Asst. Sherman Adams and Defense Secy. McElroy still are stressing the need for rigid economy in defense. Vice-Pres. Nixon and Secy. of State Dulles publicly put all their emphasis this week on security and the desperate

need to catch up with the Russians in missiles.

• Evil Omen—To the State Dept., Sputnik immediately spelled real trouble ahead, the beginning of a period that might be as ticklish as the Korean War period, with danger possible in the Middle East and Berlin. Looking forward several years, State Dept. officials can see nothing but disaster for the U.S. unless we catch the Russians in the missile race.

A top career diplomat, in an effort to put things in perspective, sized up the situation this way:

"As late as 1950 our atomic superiority gave us the military power to serve an ultimatum on Moscow. As late as 1955, our still decisive over-all

military superiority might have made it possible to obtain a long peace in the cold war and a significant degree of disarmament if we had been prepared to recognize Soviet postwar gains. Today we still are very strong. We still are ahead in nuclear weapons. Our deterrent power still is effective. But the balance of power is shifting against us fast. By 1960, if we don't make a total effort to catch up, we may be too weak either to negotiate a settlement or to prevent massive new Soviet expansion. Then the alternatives would be to capitulate or to fight a hydrogen war at a great disadvantage."

I. Reappraisal in Washington

Such talk reflects a painful disillusionment in much of official Washington with the assumption of Soviet weakness that underlay our policy before Sputnik. This assumption could be summed up this way: Political unrest in Eastern Europe, plus political and economic ferment inside the U.S.S.R. and China would force Khrushchev to seek an accommodation with the West and eventually to humanize the Communist system.

Washington's experts on the Soviet Union say that this assumption may still be valid in the very long term. But they feel that short term, Khrushchev has stabilized the situation within the Soviet empire. And now the triumph of Sputnik will definitely boost his in-

ternal prestige.

· Stronger Links-By midweek, reflections like these were spreading fast through the State Dept. and the lower ranks of the rest of the Administration. though there was no sign that the Cabinet as a whole had vet accepted them. If the State Dept.'s appraisal is accepted-and in time it is bound to have a powerful effect on the rest of the Administration-the White House will have to set up a crash program for missiles, though up to this moment it clearly is reluctant to do so. It will also get set to do a number of things designed to strengthen our alliances abroad:

 Tighten the NATO alliance by pooling scientific and technical skill with our allies under amendments to

the MacMahon Act.

Fight for the same kind of imaginative foreign aid program that Congress refused this year, partly under the prompting of budget-cutters within the Administration.

 Maintain our present liberalized trade policies in the face of growing attacks from protectionist forces.

 Pay more attention to fending off any general business slump in the Western world (page 126)—a development that might damage our prestige as badly as Sputnik has.

• State of Shock—Dulles told Moscow flatly this week that we wouldn't be scared out of the Middle East by Khrushchev's threats. And he gave assurances to our Allies everywhere that the U.S. would not ditch them for a

Big Two deal.

There's no doubt that allied governments have been in a state of shock. Europeans in particular have been shaken by the immense power of blackmail that Sputnik has put into the hands of a ruthless fanatic like Khrushchev—and the impression among the underdeveloped countries that Communism can be efficient as well as powerful.

As for disarmament, Britons and Europeans now are convinced that the disarmament breakdown was not due to any Western mistake but to a calculated Russian decision to break off

the talks.

The question now is whether Khrushchev means to push his new advantages to the limit. Apparently he feels that, with the whole of the U.S. now potentially exposed to Soviet nuclear attack, he is free to use the threat of local aggression as a weapon of diplomacy. It may even be that Khrushchev aims to use his own version of "brinkmanship" to roll back U.S. influence both in the Middle East and in Europe.

II. Blackmail Weapon

Khrushchev already has made several moves that point in this direction:

 In Syria, he is obviously trying to produce a crisis with Turkey that can be used either as a direct excuse for Soviet intervention or as an excuse for an international conference on the Middle East.

 In Germany, he has launched a vicious attack on Chancellor Adenauer and pulled off a punitive monetary change in East Germany that may be just the first step toward a new blockade of West Berlin.

 In Yugoslavia, he has had his closest partner, Marshal Zhukov, push Tito into a recognition of East Germany and prepare the ground for Yugoslavia to denounce its defense pact with

Turkey and Greece.

• First Target—Khrushchev has chosen Turkey as his immediate target in the Middle East for good reasons. Turkey is the anchor of NATO in the Eastern Mediterranean and the backbone of the Baghdad Pact. If Turkey went down, the whole Western position in the Middle East could collapse overnight. His difficulty is that Moscow can't fight a Korea-type war against Turkey for the simple reason that there is no proxy army available for the purpose as there was in Korea. Even if Khrushchev could line up all the Arabs, they would be

no match for the Turks. It would take Soviet "volunteers" at the very least to do the job. At midweek, though, Moscow still was stirring things up in the Middle East.

Washington actually is more fearful that Khrushchev will force a test of strength in Germany than in Turkey. In Berlin he can work through the East German Communist regime, instead of confronting Washington directly. If he is aiming at another Berlin blockade, there's no doubt it would be run by the East Germans this time.

III. Soviet Game

In both areas, Washington's view is that Khrushchev will stop at harassment. Officials doubt that he wants to run the risk of World War III at a time when he must feel that he's gaining ground against the West anyway.

In fact, there are Western observers who feel convinced that the major tactical objective of Soviet diplomacy is a Russian-American dialogue—with Khrushchev as guest in the White House and a sort of super Yalta as the

goal

Dulles is well aware that a Big Two deal is, in fact, the Soviet price for peaceful coexistence. And he also knows that any such deal would involve agreeing that (1) the U.S.S.R. should have a protectorate over both the Middle East and Germany; and (2) the U.S. would not encroach on Soviet territory, though Soviet agents could continue their subversive activities in the West.

· Time of Decision-Actually there's a growing feeling in Washington that the U.S. soon will have to make up its mind whether it wants to negotiate with Moscow to see what terms it can get, or whether it wants to go back to the attitude of 1947-48, when our main purpose was to build up the strength of the Atlantic Alliance. All the signs now point to a refusal by Washington to agree to global negotiations. One thing against this now is our obviously weak bargaining position. Another, of course, is the general American re-luctance to enter the kind of discussion that could end only by endorsing Moscow's postwar gains.

On the other hand, a growing number of officials in the State Dept. argue that just tinkering with NATO won't be enough to strengthen the West. Some of them are coming to feel that what is needed is an all-out crash program in defense, a dramatic effort to unite the Atlantic Community, a huge new aid program to meet the demands of backward countries for rapid economic development, and more liberal trade policies to stabilize the free world

conomy.



GEN. NATHAN TWINING, chairman of the Joint Chiefs, speaks for the military.



DEFENSE SECY. Neil McElroy has the last word, except for the President.



WILLIAM HOLADAY is the Pentagon's coordinator of the missile development.

Still Standing Pat on Missiles

Sputnik or no, the Administration plans no drastic change in the missile program. Its studied calm is goading critics here and abroad into frantic calls for action.

As the second week of Sputnik's life runs out, official Washington has shaken down into two clashing patterns of response:

The White House and the Pentagon have reviewed the situation and insist that the Russians' feat in launching the first earth satellite need have no effect on missile spending or scheduling.

 The State Dept., much of the executive and military brass below Cabinet level, and Congressional leaders of both parties are demanding, with growing vehemence, a change of policy that will enable the U.S. to catch up with Russia.

The question: Can the White House make its decision stick in the face of the pressure that's building up?

Calculations—The President and Defense Dept. chiefs have presumably reached their stand-pat decision after due deliberation. Eisenhower has been talking all week with military and foreign policy advisers, scientists, and intelligence officials.

The decision after this reappraisal of policy is not to put missile research and production on any such crash basis as that which developed the atom bomb in World War II, not to give the armed forces more money to spend on missiles.

The Administration—the President, Presidential Assistant Sherman Adams, Press Secy. James C. Hagerty particularly—has underlined this decision by going out of its way to create an atmosphere of calm.

There are some signs that the door is still open for reconsideration. The strongest public reaction to Sputnik to come from a high Administration source was voiced this week by Vice-President Richard Nixon: "We could make no greater mistake than to brush off [Sputnik] as a scientific stunt."

Nixon indicated that defense demands might even rule out any tax cut next year. But despite the seriousness of his tone, Nixon gave no inkling that the Administration plans a basic change in defense policy.

The first post-Sputnik meeting of the National Security Council was pointedly billed as a routine meeting, and it was, from all accounts, a routine meeting. The Cabinet meeting next day was also routine, with no evidence that anyone spoke up for an overhaul of our military program. So was a meeting of the President and his 13-man Science Advisory Committee, which, the White House emphasized, had been scheduled for months.

At two personal conferences with the President, Defense Secy. Neil H. Mc-Elroy (picture) was accompanied by W. J. McNeil, the Defense Dept. comptroller. Pentagon sources say there was as much attention to maintaining the \$38-billion military spending ceiling as to Sputnik and its implications. The Pentagon has been working calmly all

week on a new stretchout of aircraft production to keep within the limitation on monthly payments to contractors (page 45). The result will be smaller deliveries of weapons to the services.

 Actions—This is not to say that the Administration has made no revisions in the light of Russia's artificial moon. Here and there, in spots where costs are ret much affected, you can see where concessions are being made to the new feeling of urgency:

• Overtime work at ballistic missile test centers has been authorized for "processing and evaluation of test results which have been piling up." The tempo of test firings appears to have been stepped up. At Patrick Air Force Base in Florida, the Air Force successfully fired its intermediate-range Thor last Friday, only a few days after the Army had another successful firing of a Jupiter IRBM.

• The recently imposed pursetightening on long-range missiles (BW— Sep.7'57,p29) is being eased a bit. Mc-Elroy has accepted a recommendation of a top-level military committee headed by missile coordinator William M. Holaday (picture) to continue testing both Thor and Jupiter "until a better technical basis is established for a decision" on which one to order into production. A choice eliminating one was originally scheduled to have been made by now.

• The Navy's Polaris IRBM project is perking up again after a six-month freeze on the hiring of engineers.

• Falling Short-These measured steps express the top Administration view that:

. The U.S. has suffered a psychological blow in world politics, but the military implications of Russian missile successes have been exaggerated.

· Russia's success is no reason to underrate U.S. ballistic missile development efforts-U.S. rocket technology is at least on a par with that of Russia.

It is "wild exaggeration," Sherman Adams told a Republican rally in San Francisco this week, to "insinuate that because the U.S. was not first, our entire ballistic missile program is in tatters and shreds."

At lower echelons, even those just below Cabinet rank, many officials are not so sure. A top official of the State Dept. sums up this reaction with the simple assertion that the whole balance of power is rapidly shifting against the U.S. (page 39).

· Worry Talk-Foreign diplomats who have remained at America's side in the cold war are expressing concern to whoever will listen. British Foreign Secy. Selwyn Lloyd kept Secy. of State John Foster Dulles in closed-door session for three and a half hours to thresh over problems of the Middle East, Russia's missile advantage, how free nations can cooperate to catch up.

Demands are coming from foreign capitals and from U.S. congressmen for a pooling of free world scientific and engineering talent to lead to a stronger effort in the missile field. Congressmen also insist on the need to review defense policy changes-the cuts in conventional forces and greater stress on nuclear arms-which, they say, were based on an assumption of U.S. industrial and scientific superiority.

The Pentagon has remained outwardly imperturbable in all the noise over Sputnik. "This hysteria is uncalled for," says a spokesman for the Joint Chiefs of Staff, whose chairman, Gen. Nathan Twining (picture, page 41), is

indisputably air-minded.

But there is a nervous reaction at lower levels. One Navy admiral phoned the Defense Secretary's office "to confirm a rumor" that the recently announced 15,000-man cut in the Navy had been canceled. He was curtly informed the manpower cut still stands.

Rumors were circulating this week that the White House had agreed to allow an "overrun" of 2% on this year's military budget, which would mean an increase of something like \$750-million beyond the \$38-billion ceiling. But the rumors apparently were based on a mistake; they reflected a conclusion, dating from some time before Sputnik went up, that cuts all the way back to the ceiling would not be possible.

· The Money Question-Washington's official line is that the ballistic missile program, already costing at least \$1.5billion this year, cannot be effectively speeded up by simply increasing its budget. Some administrative tightening of the program, with more centralized control over operations, is being considered, however.

Some military men have seized upon the Sputnik coup as a lever for prying more defense funds out of the Treasurv. So far, they haven't made much headway. "A new source for a lot of wishful thinking has developed," says a knowledgeable Pentagon source.

'Sure, there'll be a tendency to be more liberal in the fiscal 1959 budget than we may have been before," a Defense Dept. budget official comments. But this will be on fringe items, not on

fundamental programs.

The greatest significance, he feels, will be the psychological pressure on career bureaucrats who make key decisions not to expose themselves to charges of pinching pennies at the expense of national security.

. The Critics Crank Up-These very charges are being leveled at the Administration already from Congressand not entirely from the Democratic

side of the aisles.

This week Sen. Stuart Symington (D-Mo.), former Secretary of the Air Force and long-time critic of Eisenhower defense policy, charged that Russia is "two to three years ahead" of the U.S. in missile development and in those two or three years will have an ICBM capable of attacking any point in the U.S. "There had better be a speedup if the U.S. is to remain a free nation," he wound up.

• Businessmen's View-As soon as it started cutting military budgets, the Administration knew it would be open to such accusations. Months ago, the President asked a committee of leading businessmen to study the Pentagon's future needs and the economy's ability to sustain them. The report, when it's ready, will go directly to Eisenhower -not even through the National Security Council.

At the outset, the group was headed by H. Rowan Gaither, Jr., of the Ford Foundation. The present chairman is Exec. Vice-Pres. William C. Foster of Olin Mathieson Chemical Corp., former Deputy Secretary of Defense.

The study is very hush-hush. Pentagon officials will barely admit that they have been quizzed by staff members of the committee, but it is certain that the businessmen are getting from military men estimates of future costs of defense that are tens of billions of dollars per year higher than Eisenhower's present \$38-billion ceiling.

But these are first guesses, and the committee and its staff are still probing patiently for a long-range view of how much of our present military force will be rendered obsolete by the latest weapons, how the U.S. can be defended, and how much it will cost.

Caution

- In planning for the new year, company economists and their bosses—the brass—are both cautiously optimistic.
- Despite a slowdown in growth, economists expect 1958 to be a little better than '57.
- But executives admit that it may be harder to increase sales and profits.

To U.S. economists and their staff economists, October is more than a season for football and foliage. It's a time to peer ahead into the next 12 months and try to estimate what they will bring to business. Then, from the forecasts that result, firm plans for the new year can be made.

Last week, BUSINESS WEEK reporters interviewed company economists and their bosses all across the nation to pre-

view their thinking on 1958.

The answers, in brief: • 1958 will be no worse than this year, probably a little better, say the economists.

· But it will be harder to make and keep a dollar, adds the brass.

On both sides, there was restrained optimism but no buoyancy. This general feeling of caution is reflected in words such as these:

• A Midwestern steelman-"It's totally unrealistic to expect new records

· A building materials executive-"We're in a period of slow growth."

· A Los Angeles company president-"The economy will be under a strain."

· A pump and compressor maker "Next year will be the year for marketing ingenuity.

· Paradoxes-It's hard to say that either bullish or bearish sentiment predominates. One thing is certain: The bears have gained markedly since midsummer. Still, there is many a paradox in current opinion.

For example, among the economists the self-professed bears are the very ones who also expect a marked pickup in the second half of 1958. The reason is simple: They believe we're already in a gentle recession and that it will turn into a fairly healthy revival sometime in 1958's third or fourth quarter. Thus, one utility economist thinks the Federal Reserve's industrial index (144 in September) will fall to 142 by yearend

Is the Word for Business in '58

but will start to rise again by mid-1958 and reach 148 by next December.

"We're in a leveling-off period," he says. "You can call it a mild recession because we're not at our normal growth

Among executives, there are other

paradoxes:

• In the industries that have been depressed this year—homebuilding, lumber, TV sets, nonferrous metals—opinion is that the bottom has been reached—perhaps passed already. These men are relatively bullish about next year.

 At the other extreme, executives in the high-flying aircraft industry especially in Southern California—think the military spending slowdown will

really hurt.

Moreover, there are definite regional differences in feelings about the new year. In Philadelphia, Cleveland, Pittsburgh, and Los Angeles, the bears tend to prevail. In New York, Chicago, Kansas City, and Portland, Ore., there's more optimism.

But there's wide agreement that neither the Sputnik's gravitational pull on the military budget nor the stock market's ragged performance—two of 1957's most sensational news events—will have much effect on business.

I. Economists' Views

The company economists use many different words to describe what they anticipate. But whether it's "a plateau," "lack of growth," "a year of adjustment," or "sideways movement," they all add up to pretty much the same thing.

In their tentative statistical forecasts, however, there are some wide divergences. Predictions of next year's physical production, for instance, tend to cluster around the FRB index of 145-146—but some are as low as 140,

others as high as 150.

• Slower Climb—For gross national product—total production of goods and services in dollar terms—estimates vary from \$440-billion to \$462-billion, but they average around \$446-billion. Compared with this year's probable GNP (about \$437-billion), this would be a gain of roughly 2%. Most economists consider this an unsatisfactory rate of growth; 3% to 4% would be more normal.

The bulk of the blame, economists say, will go to a slowdown in capital spending. It has been running at a \$37-billion level this year, but it's expected to slip \$1½-billion to \$3-billion in 1958. Consumer spending, however, is expected to increase \$6-billion

to \$10-billion. In fact, a continued high rate of consumer spending should account for almost all the economy's growth. The only other bullish factor is expected to be state and local government spending, estimated to climb another \$3-billion. A speedup in the highway program should also help.

• Vital Statistics—Here's how company economists foresee the 1958 standing of some important aspects of

business:

• Auto output-6-million to 6.5-million cars.

• Private housing starts-1-million to 1.1-million units.

• Steel production—115-million to 126-million tons.

• Capital outlays—\$34-billion to \$35.5-billion.

• Consumer purchases—\$287-billion to \$291-billion.

• Wage rates—up 4% to 5%.

Every economist, of course, tends to weigh these factors differently, and the result also depends on his basic outlook—bullish or bearish. One bear, an economist for a Philadelphia-based company, interprets his forecast this way: "We are not looking for a hair-curler, but this is nothing to laugh off.

. . . It is a genuine slump, '54 style. Beginning with the fourth quarter, however, the FRB index should start up

again at the rate of 2% a year.'

Looking at the same picture, an economist for a big diversified outfit comes up with an entirely different view. He looks for GNP to rise to \$450-billion next year. And he reacts bullishly to the gloom: "A lot of this is inevitable. You have this transition from planes to missiles, but that's a long-term trend. You may have individual dislocations, and you read a lot about cutbacks and stretchouts and people being laid off. But that's all temporary. It isn't the over-all story, and a lot of it's been exaggerated."

II. Executives' Views

As for the executives, they accept the economists' forecasts—even the pessimistic ones—but they see it all happening to someone else. For their own companies, most plan to increase sales and output 5% to 25%.

Most of the bosses recognize that if the economy as a whole expands less rapidly, it will be harder to raise prices or boost sales volume. And since wage rates are still likely to go up about 4%, there's increasing concern about profit

"For business, this means even more effort to protect margins by cutting out

old products, introducing new ones, and controlling costs," says Walter E. Hoadley, treasurer of Armstrong Cork

 Careful Hope—Among executives in general, there's still a widespread feeling of cautious optimism, unmarred by concern over the stock market's decline since midsummer. Surprisingly few complain about tight money or high interest rates. Some companies have stretched out their investment programs, but they usually blame a lessening demand in specific markets. Longterm development plans are proceeding on schedule.

On wage demands, men in top management expect a generally stiffer resistance from business. They think consumer prices will advance much more slowly next year, and that this should prove a strong argument in wage nego-

tiations.

• Industry Summary—Feeling about 1958 varies from industry to industry. Here's a rundown on executive pulses

in some key fields:

Autos—In general, the new models are far more exciting than their 1957 predecessors. It now looks as if 1957 sales will comfortably pass the 6-million mark, and 1958 could exceed this substantially. But Detroit worries about the possibility of a midsummer strike and increasing price resistance among car buyers.

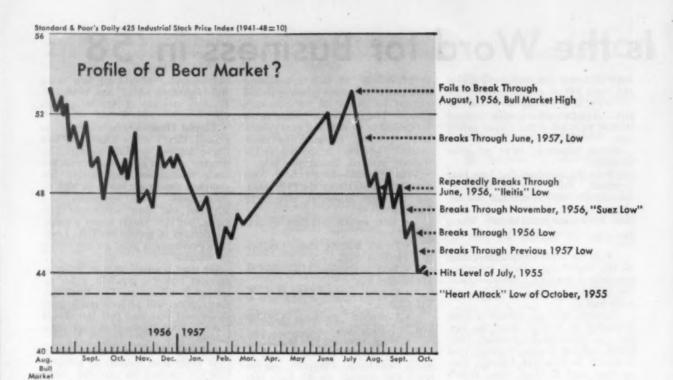
Homebuilding—Next year is bound to be better; housing starts may approach 1.1-million. An Oregon lumber producer thinks this alone will increase his sales volume 10%.

Aircraft and missiles—The pattern is mixed. One Toledo aviation executive says his backlog "is enough to stretch out over nearly three years now." But an official of North American Aviation in Los Angeles has seen half a billion dollars lopped off in military cutbacks and cancellations. There's some hope in the industry that Sputnik will spur defense spending.

Steel—Next year's output should be 115-million to 117-million tons. One steelman thinks his company might show improved profits even with a slightly lower operating rate, because of lower raw material costs and improving productivity.

Farm machinery—Sales should improve, thanks to the end of drought in the West and Southwest and bigger farm incomes generally.

Construction—The future is summed up this way by Lester Rogers, president of Associated General Contractors: "Things won't boom much in the next six months, but if the economy stays where it is, it'll be pretty good."



he Bearish Look Gets Clearer

The chart above spells out an ominous message to Wall Street's traders. It says that the decline in stock prices that began last summer has gone past the point where it can be dismissed as a technical reaction. Looking at the pattern traced by the almost panicky drops of the past couple of weeks, chart readers see something that looks more and more like a full-fledged bear

This week marked the first time that Wall Street was definitely saving that the bears had taken over. Up until now, many investment men were betting that stock prices would stay in a fairly narrow range that was neither bullish nor bearish. But now the overwhelming feeling is that the great bull market has definitely given way to the

bears.

High

The appearance of a bearish cast does not mean that stock prices will not recover from their present levels. On the contrary, it is probable that there will be a rally that may make up a substantial part of the drop since the peak. In the first two days of this week, for instance, the market averages rose about 4%. But if this market runs true to form, then prices will not keep climbing, but will again turn down.

· First Stage-It has been a long time since we have had a full-fledged bear market. Most technicians say that the 1946 decline, when blue-chip stocks dropped 20% and more speculative issues plummeted 50%, signaled a bear market that never actually materialized. They tend to regard the 1937-1938 drop, when the averages declined by 50%, as the last real bear market. By this type of measurement, the present drop is just the first stage in a bear market.

As the technicians see it, the second stage comes after a good-sized rally. A rally in a bear market usually starts when a selling wave is over and stocks look like bargains. But as prices begin rising, investors who missed getting out the first time decide to sell. So instead of gaining momentum, the rally quickly loses its steam.

In a bull market, stocks rally up from a decline. They did after Pres. Eisenhower's heart attack, and again after his bout with ileitis. But now stocks are not showing the same resiliency.

· Some Strength-There is no telling just how low the current market will go. Many Wall Street brokers feel that the strength now being displayed by aircraft and electronics stocks has kept the general level of prices from tumbling further. "If we didn't think that there is going to be a speedup in the missile program and a general turnaround in defense spending," explains one broker, "stocks would now be selling another 5% to 10% below their present prices."

Though the possibility of a hike in defense spending is holding up the market, there is no question that the launching of the Soviet satellite was an important factor in the latest slide.

• Reappraising Business-But this is not merely a Sputnik market. The fact is that the stock market is going through a readjustment based largely on the readjustment in the economy.

The boom in the stock market was based in part on a fear of long-term inflation. But when the Administration announced its economy drive, and the impact of the Federal Reserve's tight money policy was being felt by an increasing number of businesses, stock prices began to slide. The slide accelerated when it became clear that there would be no sharp rise in business activity this fall.

This reappraisal of the business picture has had its sharpest impact on the growth stocks that led the bull market. When investors were inflation-minded, they bid up growth stocks to a point where their yields averaged less than 2.5% and their future earnings were heavily discounted. In a bear market, where investors are deflation-conscious, this type of stock is least favored.

· Price Rollover-Some stocks have managed to withstand most of the pressure brought by the successive selling waves. Such defensive securities as grocery chains, drugs, and utilities have, by and large, kept their declines to a minimum, and, when the market is not hit by a selling wave, manage to swim up stream. This, too, is a common feature of a bear market. As one investment man puts it, "You can expect to see a rollover in stock prices, with some doing better than others, because the economic picture is not all black, but rather a mixture of grays.

The strength in "missile" stocks tends to bear out this view. Before Sputnik most aircraft stocks were as hard hit as metal stocks. Now they have been rising, but most are well below boom highs, and few Wall Street brokers feel that they will now make new peaks. "The boom psychology is out of the market," says one broker. "People now recognize that blue chips can go down as well as up.

· Interaction-The decline in stocks has now come close to a point where the market is not merely a barometer of business sentiment, but can itself affect business decisions. For one thing, the market trend is leading some companies to reappraise spending plans. For another, few companies like to sell stock in a declining market to finance new investment. Some of the best known-such as Standard Oil (N. J.), which has a big operation coming up-can get away with it, but the ordinary company finds it too expen-

If business spending does turn down significantly, that may produce another over-all decline in stock prices. Many Wall Street men feel that even without a slide in spending another decline is likely. They expect to see a fair amount of tax selling, mostly for the normal purpose of registering losses, but also to nail down profits before they disappear.

• How Far?-At the same time, a further decline would make a lot of stocks good buys, particularly to big institutional investors. The institutions are currently doing little new buying except in sudden drops that bring specific stocks down to "bargain" Any increase in their buying should help provide a prop in selling waves. And, eventually, when yields rise and stocks appear to have been thoroughly revalued by investors, the bear market psychology will fade away.

It is possible that a fundamental and unexpected change in the business outlook will end the present decline. A big rise in government spending and an easier credit policy might lead to a quick change in investor sentiment. But as one Wall Street man summed it up: "Unless we get a big shot in the arm, this market is likely to dribble along."

New Demands on Money Mart

Washington's economy drive leads to call for more credit—to keep Treasury under debt ceiling and to finance defense contractors hit by slowdown of government payments.

Heavy new demands for credit. created by the Administration's economy drive, showed up this week in both the banks and the money market.

The nation's biggest borrower, the U.S. Treasury, announced that the Federal National Mortgage Assn.-Fanny Mae-will sell \$250-million in short-term notes to reduce its debt with the Treasury. This financing, made at the Treasury's request, will help keep the Treasury from bursting through its \$275-billion debt ceiling.

The nation's banks are similarly poised for a new upturn in loan demand as a result of the Pentagon's decision to slow progress payments on defense contracts as well as to fix ceilings on monthly Air Force bills (BW-Oct.5'57, p52). Like the Fanny Mae financing, the Pentagon's move helps ease the Treasury's problem but it also means a new squeeze on credit.

It's hard to tell how big the loan demand from defense contractors will be. Estimates by banks and businessmen who are engaged in defense work range from \$500-million up to \$2-billion. But even the lesser figure would complicate the position of both the nation's banks and the money managers of the Federal Reserve.

. Up in the Air-The main reason for confusion over just how much is involved is that few companies have received definite instructions from the Defense Dept. This showed up when BUSINESS WEEK reporters last week checked with defense contractors around the country. Answers to their questions indicate substantial differences in how the Air Force is applying a ceiling on payments to contractors.

For example, one airplane maker reports: "They told us, in effect, that we can bill \$5 from now on for every \$8 we billed them in September." Another says the ceiling amounts to a 5% reduction across the board. Others cite a 20% figure, and one went up to 37%.

According to the Pentagon and the Aircraft Industries Assn., the ceilings are to be fixed individually, and they will depend not only on what product the company is turning out but also on

its individual financial position.

• Rocket Acceleration—Another reason for the confusion is, of course, Sputnik. Many companies that have been hit by the Pentagon's economy drive are the same ones that will benefit if and when the missile program is stepped up as a result of the Soviet coup. Now, they're up in the air over where they stand. As one official of an aircraft company engaged in rocketry explains, "We're holding back on going to the banks for funds, because if the Pentagon gives us the green light on our rocket work, it will undoubtedly boost our payments."

However, if the Defense Dept. is intent on holding down its total spending, the funds that go to accelerate the rocket program will have to be taken out of other projects. This would mean a slowdown in payments to some other defense suppliers. In any case, the overall level of loan demand is not likely to be reduced much.

· Money Available-The banking system can accommodate a certain amount of increased demand, because business loans are running well behind normal seasonal expectations (BW-Oct.12'57, p46). In September aione, business loans by the Fed's weekly reporting member banks increased only \$319-million; in 1955, they increased \$521-million, and in 1956 by \$681-million.

This slackening in loans would mean easier rates except for the threat of the new demand that now hangs over the banking system. As it stands, the banks are in a position to increase their loans by \$250-million to \$350-million without any change in the interest rate structure. But if loan demand goes higher than that, short-term interest rates will soar unless the Federal Reserve takes action to prevent such a rise.

The Fed is not saying if it will act. But its officials do not feel that an increased demand for credit by defense contractors represents a new inflationary threat. It is regarded as "merely an alternate means of financing." This appears to be a clear sign that, if demand increases, they are prepared to inject reserves into the banking system in order to prevent interest rates from jumping up.

· Make or Break-There's no doubt that the current level of interest rates is itself a damper on increased demand. According to some defense contractors, the 41% rate now in effect for prime loans risks cannot be included in contract amounts as an allowable cost. Instead, as one executive put it, "Interest comes out of our hide and will just about make up the difference between red ink and black.'

Defense contractors will have to lay off workers, go slower on contracts, and cut overhead wherever possible.

Fifth Avenue Pays Homage to Its



50-Year-Old Guardian

One morning last week, New York's Fifth Avenue woke up looking as though King Midas had strolled by, gilding the street with a wanton touch. Street signs (left) dazzled the eye. Store fronts glittered with gold. Aloft, yellow-gold flags were unfurled, while below, the avenue's traffic guideline had been transformed into a near-gold yellow. Even fire hydrants and trash cans looked like over-sized nuggets.

After the first shock, Manhattanites realized what had been going on under their noses for the past three weeks. The famous shopping center was being manicured and polished in anticipation of the 50th anniversary of the city's Fifth Avenue Assn.—an organization dedicated to prodding, poking, and

pulling association members, nonmembers, and city housekeeping departments into a never-ending job of grooming the avenue and its buildings.

By Oct. 10, the spit-and-polish job was completed, and the celebration in gold was ushered in by a night parade of marchers bathed in light from amber street globes and flanked by torchbearing Boy Scouts. Last Friday, 1,000 association members and guests moved over from tidy Fifth Avenue to the Waldorf-Astoria Hotel on equally tidy Park Avenue for a wind-up \$50 dinner served on the Waldorf's golden table service.

 Watchdog-For half a century, the Fifth Avenue Assn. has kept a benevolent if militant eye on the Fifth Avenue



TORCH-LIT parade ushers in golden anniversary of Fifth Avenue Assu., watchdog of New York's famed shopping center.





A LEFTOVER from the days of the "carriage trade," the horsedrawn Victoria is still a familiar sight on upper Fifth Avenue.

NEW BUILDINGS conform to association's regulations on height, bulk, contours, color, and zoning laws.

WELL-SHOD, well-dressed New Yorkers prove-to the association at least-the selling power of a Fifth Avenue label.



shopping and business district. In its vigil against the "cheap and tawdry," the association has influenced zoning laws, city planning, traffic, taxation, and other legislation. With its own staff of inspectors, it backs enforcement of laws affecting traffic, sanitation, window displays, street conditions, new construction, building alterations, and signs. Its "bans" include pool rooms, funeral parlors, dance halls, gasoline stations, bowling alleys, movie theaters, open-front stores, and cruising taxis.

Even for the businesses that make

Even for the businesses that make the grade there are taboos. Because the association deplores the use of the word "Sale," it frowns on store front stickers, neon signs and banners, and red print. Live models for window displays are discouraged, too.

• Inspection—One of the association's more important functions is its loosely described role of building and architectural consultant. Its inspectors check all new building and alteration plans against zoning regulations, height, bulk, contours, materials, and colors. The inspectors work through the law and city enforcement officials only if they can't persuade stores, banks, even churches, to conform. But to soften its strictness, the association makes biennial awards for the best new buildings, best renovation, best store front, and best institutional building.

• Boundaries—Although the association won't hazard a guess as to how much business the district does, the boundaries are well defined. On the avenue itself, membership extends from Washington Square to 110th Street; on Madison Avenue, from 23rd Street to 96th Street; on Park Avenue, from 32nd Street to 96th Street; and 57th Street from river to river.

Association membership is between 1,000 and 2,000, according to Michael B. Grosso, executive vice-president. To join, members put up from \$50 to \$1,500, according to the size of their businesses.

• Payoff—Most of the members agree that conformation to the association's somewhat dictatorial standards is effort and money well spent. Fashion-conscious New Yorkers from most income levels value the Fifth Avenue label of stores from Bergdorf Goodman to B. Altman & Co., and the goal of most sportsmen is equipment from such shops as Abercrombie & Fitch. The swank jewelry shops such as Cartier, Tiffany, Black Starr & Gorham do a brisk business, too.

But Fifth Avenue is more than a street of shops and shoppers. It also is a center for the television, advertising, and publishing industries. And most of the city's 12-million annual tourists rubberneck the avenue's galleries, churches, library, parks, Rockefeller Center, and the Empire State Building.

High Court Rattles Off Cases

First batch of decisions this term disposes of 200 cases, including significant issues of tax deductions, fair trade, antitrust, advertising, and business practices.

The U.S. Supreme Court, in its first "Decision Monday" of the new term, this week disposed of about 200 pending cases on its crowded docket.

By brief orders with no written opinions or simply by refusing to review lower court decisions, the nine justices in effect decided dozens of business cases ranging from mining operations to slip-covers and frozen

Here's a rundown of some of the important rulings by the high court:

Depletion allowances. Mine owners may take these allowances for tax purposes on all income from manufacturing or other operations directly connected with their mining activities. For example, the depletion allowance on brick is not limited to the mining operations involved in obtaining clay but covers the entire sales price of the manufactured brick. The Treasury Dept., which unsuccessfully sought to upset this ruling affecting 13 cases, says it could cost the government more than \$133-million in tax refunds and an annual revenue loss of about \$88-million.

Fair trade. Three "fair traders" lost appeals, including General Electric Co. (page 140). Esso Standard Oil Co. lost in its attempt to enforce fair trade prices on retail gasoline against a Boston retailer. The suit was dismissed on grounds there is some competition between Esso and the retailer for wholesale sales to large commercial accounts, such as operators of taxis and truck fleets.

Distillers Corp.-Seagrams, Ltd., lost a suit to compel 52 Illinois retailers to stop selling Seagram products below prices set by Seagram under the Illi-

nois fair trade act.

Insurance advertising. Reversing a lower court decision, the court upheld the power of the Federal Trade Commission to subpoena the books of the Firemen's Fund Indemnity Co. of San Francisco in an investigation of alleged false and misleading health insurance advertising. The company argued FTC had no jurisdiction to regulate health insurance advertising.

insurance advertising.

Frozen food. Over the objections of the Interstate Commerce Commission, 63 railroads, and the American Trucking Assn., the court upheld a lower court ruling that powdered and frozen foods are "agricultural commodities" and thus exempt from ICC regulation. This means truckers can carry such

products in interstate commerce without ICC certificates or permits.

Slip-cover monopoly. The court upheld the summary conviction—with no trial—of Comfy Mfg. Co. and Sure-Fit Products Co. for monopolizing production and sale of readymade knitted furniture slipcovers. Justice Dept. anti-trusters charged that the two companies achieved their combined share of the market—61%—through pooling patterns, fixing prices, and discriminatory pricing.

Truck rentals. The court upheld the antitrust conviction of Nationwide Trailer Rental System, Inc., for illegally fixing the rates that member companies charge for rental of one-way truck trailers and for setting up "exclusive"

territories.

Antitrust suit. Massey-Harris-Ferguson, Ltd., a leading Canadian farm equipment manufacturer, must face private triple damage suits under the Sherman Antitrust Act, brought by independent farm equipment dealers in Tennessee—even though the company does no direct business in the U.S. Left standing are lower court rulings that the Canadian company can be sued through its U.S. subsidiary, Massey-Harris-Ferguson, Inc.

Automobile franchises. Two new car dealers in Baltimore lost their suit to collect triple damages against two car manufacturers for refusing to renew their franchises and for granting "exclusive" franchises to competing dealers. The suits against Hudson Motor Car Co. (since merged into American Motors Corp.) and Packard Motor Car Co. (since merged into Studebaker-Packard Corp.) had been dismissed by lower courts on grounds that manufacturers can legally grant exclusive dealerships. The dealers had appealed. · General Aniline Case-In a move that surprised Justice Dept. officials, the court agreed to hear arguments by the Swiss holding company, Interhandel, that its suit for return of the multimillion-dollar General Aniline & Film Corp. was improperly dismissed by lower courts. The court's action effectively ties up Atty. Gen. Herbert Brownell's planned sale of 75% of the General Aniline stock held by the government as a seized enemy asset.

The court also agreed to hear an appeal of the Panama Canal Co. from an order to lower canal tolls, as well as four California cases challenging fed-

eral reclamation policies.



Britain's Atoms Stage a Scare

 Overheated reactor at Windscale plutonium factory sets off free world's worst nuclear accident to date.

 Cause is wrapped up in security considerations, but only frantic all-night sessions of experts saved day.

The near-disaster contaminated milk in area, got into cabinet talks, may mean changes in atom power stations.

Late on Thursday of last week, radioactive products spewing out of a giant 90-ft.-high overheated reactor at Britain's Windscale plutonium factory signaled a near-disaster for the nation in the free world's worst nuclear accident to date.

At midweek, a 100% security blackout still masked the cause of the accident and the extent of the damage. But it now seems clear that because of unusual circumstances the incidentwhich might well have involved several hundred tons of uranium-got well out of hand before detection. By that time it had all the potential of a major atomic catastrophe, with only the bang missing. In the end, catastrophe was only averted by successful on-the-spot emergency

 Wide Alert-Once the "fire" had been discovered at the plutonium factory in northwest England, action came Within two minutes, Prime Minister Harold Macmillan had been notified by phone that a wide-scale civil defense mobilization might become necessary. The Atomic Energy Authority warned him of the possibility of radioactive fallout equivalent in extent to that from an atomic bomb.

At the factory, three thousand workers took cover. At nearby Calder Hall nuclear power station, workers were sent home. Windscale No. 2 reactor was shut down to free men for emergency operations. (It was No. 1 that went amuck.) Some 300 miles to the south, the atomic energy research center at Harwell was mobilized for advice.

· Mystery-Most mystifying and alarming feature of the incident to physicists and metallurgists was this: When the overheating was discovered, the sevenyear-old reactor was out of action-shut down for routine maintenance. This is taken to mean that some new and obscure nuclear mechanism had asserted itself. The sequel is almost certain to involve some modifications to Britain's

civil nuclear power stations.

• Different—It is apparent, however, that the scope of the Windscale disaster was greater than would be possible with the newer Calder Hall-type reactors.

The two types of reactors in use at Windscale and at Calder Hall (BW-Oct.27'56,p126) have essentially different design features. And both differ from any reactor in use in the U.S.

The older Windscale reactor is an open-cycle air-cooled reactor, while Calder Hall's power reactors are of the closed-cycle pressurized-gas-cooled type (with carbon dioxide used as the coolant). Closed-cycle means that the cooling gas recirculates inside, while in the open-cycle, the air used as coolant is discharged into the atmosphere through a chimney after it has done its work, with filters to sift out radioactive gases, corrosion, and fission products.

· What Happened-How the Windscale plant, working for seven years-so trouble-free as to be dull-came to be afflicted with the condition in which it was found is not clear.

According to the Atomic Energy Authority statement, the reactor had been shut down for some time before it was discovered that a considerable number of fuel elements were glowing red hot. This meant they were several hundred degrees hotter than they should have been, that uranium was fissioning, and that radioactive products were being emitted from the stack

It is known that eventually water was used to subdue the outbreak and quell the radiation heating effect-but only after frantic night-long calculations at Harwell indicated it was safe to do so. · Threat-The immediate threat was the escape of volatile fission productsmainly the radioactive isotope of iodine -which could pass through the chimney

filters. Solid, longer-life particles of strontium and caesium were expected

to be trapped. Milk samples from freshly milked cows in the vicinity were rushed to Harwell-and immediately traces of radioactive iodine. In 24 hours the content had rocketed to six times the permissible tolerance level. On Sunday a special press conference announced a shutdown of all milk distribution in a three-mile radius, on Monday to a 200-sq.-mi. area.

All milk was being discharged into the sea, and farmers were warned not to

pour it down their drains-a possible indication of the presence of longerlife elements thought to have been

trapped in the chimney filters.

• Speculation—The whole matter soon came under discussion at the cabinet level. There was concern in both industry and government over possible effects on Britain's ambitious nuclear power program and the drive to export Calder Hall-type reactors. Officials were quick to point out the differences between Windscale and Calder Hall types.

The consensus of opinion seems to locate the cause in the heating effects of fission products-trapped in the fuel elements-that continued after the reactor was closed down. The heating effect is known and is generally small, but the mechanism is not fully understood. With the reactor closed, there was no cooling airstream; the instrumentation was possibly disconnected.

Speculation as to why this was the

first charge in seven years to blow its top suggests possible use of enriched fuel, or an excessive burn-up condition in the affected cartridges.

· Putting It Out-Presumably the hastily mobilized brains of Harwell thought the process would not snuff itself outor that it might involve the whole of the uranium charge.

The dilemma then was what to use to put it out safely. Air-even if effective -would have blasted fission products through the countryside. Reports conflict as to whether carbon dioxide was tried, but the likelihood of finding it in sufficient quantities was remote.

Just when the emergency passed has not been disclosed, but now the reactor lies waterlogged and cold. And an utterly exhausted salvage crew rests after its successful fight to minimize the second and biggest large-scale nuclear incident (first was some years ago at Canada's Chalk River atomic center). There were one or two cases of radiation burns on salvage workers, and several were contaminated. One was scrubbed with brushes in 12 separate baths, and sent home in gloves with his fingertips still radioactive.

· Raised U. S. Eyebrows-U. S. atomic experts regard the accident with somewhat raised eyebrows. Heat output from fission products can be accurately calculated here, they say, and the occurrence of fission in a shutdown reactor means it was not properly shut downspent elements removed, enough of the remaining elements partially withdrawn to make fission impossible, control and safety rods fully inserted. They also see it underlining U.S. objections to gas coolants as subject to leakage that is hard to detect and contain.



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In Business

Federal Court Gives Truckers Their Greatest Victory Over Railroads

The trucking industry last week scored its biggest victory ever over the railroads in a federal court in Philadelphia. Judge Thomas J. Clary strongly upheld the truckers' contention that the rail industry—and the Carl Byoir public relations firm—had conspired to destroy long-haul trucking competition.

What's more, if Clary's decision stands up, it appears to add these new dimensions to antitrust regulation:

 Concerted activity to influence legislation can be an antitrust violation.

 In such a case, the antitrust laws can be applied even if the defendant is not in a regulated industry.

The railroads are already threatening to appeal the decision. But such a move has its risk. Judge Clary, though he generally ruled for the truckers, rejected their demand for \$250-million treble damages. Legal observers say that in a railroad appeal the higher court might easily reinstate the heavier damages.

Vogel Triumphs in Loew's Battle But the War Is Due to Go On

Battle-torn for over a year, Loew's, Inc., now faces a period of peace-about three months' worth.

Pres. Joseph R. Vogel this week won a wide victory at a special stockholders meeting over foes led by director Joseph Tomlinson. Vogel's proposal to enlarge the board from 13 to 19, and his slate of new additional directors won by 6-to-1 margins. Cumulative voting permitted the Tomlinson group to salvage one additional director, Samuel Briskin, whom it had been pushing to succeed Vogel.

Vogel now can count on 13 of 19 directors, instead of only four out of nine on the old board.

Few observers think the war is over. A federal court test of the validity of Vogel proxies is still pending. And with the regular stockholders meeting due in February, Tomlinson may shift to all-out proxy solicitation, instead of concentrating on legal moves.

Astor Halts Work on His Plaza; Some See End of Office Building Boom

Vincent Astor, New York millionaire whose family fortunes were founded when the nation itself was young, is caught in the tight money vise. Unable to find a lender who's willing to take even 5½%, Astor has had to halt work on Astor Plaza, a 46-story, \$75-million office building on Park Avenue. Now he's seeking new capital for the project.

More significant, New York real estate developers guess that Astor Plaza's troubles bring much closer the end of Manhattan's 10-year boom in office construction (BW-Jan.12'57,p43). Say some: "This could be the project that ends the party." Astor has signed up only two major tenants—a branch of the Hanover Bank and Newsweek magazine (and Astor owns Newsweek, anyway). He has firm assurances from others who, if they were to join the already signed-up tenants, would occupy less than half of the building's 1-million sq. ft.

This doesn't satisfy prospective lenders. So Astor is seeking partners. Even if he does get them, and if Astor Plaza goes ahead more or less on schedule, the Manhattan office construction boom will have had a stiff setback. "Astor's 'halt' order is bad psychology for everybody in the market—developers, builders, brokers, and tenants, too." says one Manhattan mortgage broker.

Hamilton Deal With Japanese Company Gives U. S. Watchmakers New Worry

U.S. watchmakers, already battling Swiss imports, are worrying about a new front—Japan. And the source of whatever trouble may develop is an American company, Hamilton Watch Co., which this week signed a 10-year agreement with Takano Seimitsu Kogyo Co., Ltd. Takano will produce precision timepieces under the Hamilton name for sale in the U.S. and the rest of the world.

Hitherto, the Japanese watch industry has barely dented the U.S. market, selling a piddling 1,895 low-priced watches last year, as compared with 13-million of all classes imported from Switzerland.

The problem in watchmaking is wages. Swiss workers get only about 65¢ an hour, compared with \$2.50 in the U.S. In Japan, rates are still lower, a mere 30¢ an hour.

To meet Swiss competition, several U.S. producers, including Hamilton, have had part of their lines made in Switzerland. Now, Hamilton's deal with Takano should bring stiff competition with Swiss imports, here, as well as with U.S.-made watches.

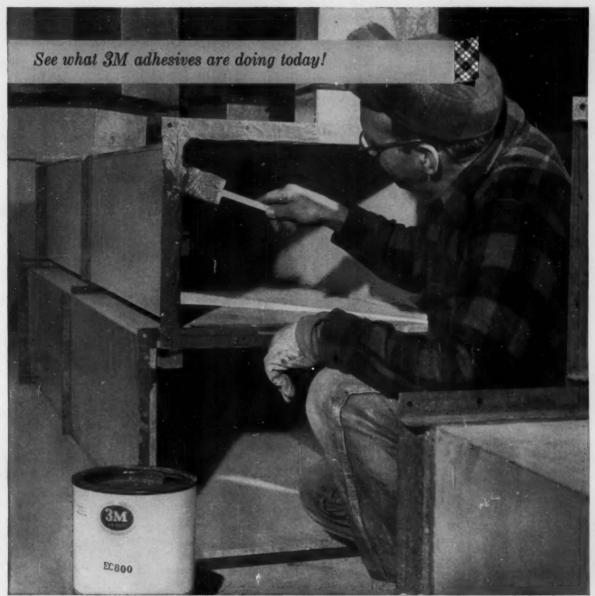
Faith in Asian Flu Vaccine Watered Down a Bit by Hospital Tests

As thousands more U.S. flu victims this week crawled achingly off to bed, considerable clouds were cast over the effectiveness of Asian flu vaccine by medical researchers:

• Dr. Maurice R. Hilleman of the Walter Reed Army Institute of Research—who first identified the Asian flu strain—reported that preliminary tests gave the vaccine an effective rate of only 46%-65%, instead of the generally claimed 70% protection rate.

 New York Hospital and Cornell University Medical Center reported the vaccine was effective on only 12% of inoculated hospital personnel.

Admittedly, these tests were based not on actual immunity to the flu, but on the increased level of antibodies in the blood.



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WASHINGTON OUTLOOK

WASHINGTON BUREAU OCT. 19, 1957



No spectacular counter to Russia's Sputnik is in sight. Many ideas have been kicked around in the long series of conferences between Eisenhower and his advisers on financial, economic, and defense policies. But the developments brought no indication of any new rabbit-out-of-the-hat scheme

Talk of a new "crash" program will continue. But at the Pentagon, key officials say new billions of dollars in spending is not the answer, even though a big money program might reassure some U.S. allies. The talk is of more effective use of the money and brains now available.

A special session of Congress this fall seems most unlikely. It has come up in the discussions. But officials discount it heavily. It might produce a scare here at home and certainly would be exploited by the Russians abroad. There's also the matter of domestic politics to be taken into account.

Democrats would use a special session to make political hay. They control both the House and Senate. And they would use this control to put Eisenhower's feet to the fire. The picture abroad would be one of disunity.

There's the embarrassment over the Russian moon. Many officials say that the U.S. didn't have to be beaten in this race—that the U.S. could have been out in front. Blame is put on inter-service rivalry, always coupled with the charge that the whole program lacked punch and coordination. The Democrats are all set to talk about "fairway leadership," whether Congress meets this fall or only comes back in January for the regular session.

Then, there's the Little Rock issue—use of bayonets to force school desegregation. Southern members of the House and Senate up for reelection next year will push this fight any time Congress reconvenes. It might well steal the headlines from any defense program Eisenhower can come up with.

Might the debt ceiling bring Congress back this fall? It's a question that pops up all the time. There's no doubt that the Administration finds the \$275-billion limit cramping. That's what forced the recent economy orders at the Pentagon. It should be remembered, however, that the cutbacks did not affect the missile and rocket field. Spending here still is ahead of schedule.

Note the new borrowing by FNMA—the Federal National Mortgage Assn. This is the government agency that can pump money into home financing by buying mortgages from lenders. Usually, it borrows from the Treasury. Now, FNMA is issuing some paper of its own to repay past Treasury advances—to the tune of \$750-million. FNMA borrowing doesn't show up in the federal debt total. So its independent step will give the Treasury a little leeway.

Other gimmicks may be used to carry the Treasury over until January, when the flow of tax receipts will begin to rise. There's some gold that could be converted into cash. And the Commodity Credit Corp. can shift some of its obligations from the Treasury, where they are figured into the national debt, to the outside. Point is that maneuvering now taking place indicates a desire to avoid calling Congress back.

WASHINGTON OUTLOOK (Continued)

WASHINGTON BUREAU OCT. 19, 1957

The GOP figures it has a political advantage—not for next year, when Congressional elections roll around again, but for 1960, when the White House will be the big political prize.

School integration will be a prime Republican argument. There's little hope inside the GOP that it will swing many votes in House and Senate races next year. These are determined largely by local issues. The gamble is that the Little Rock incident can set 1960 up for the GOP Presidential candidate. Expectation is that Southern Democrats will split off from their Northern and Western colleagues, and that the Republican candidate will benefit from a much larger share of the Negro vote in the North and East.

Watch New Jersey and New York City elections next month. The GOP doesn't claim that its desegregation stand will give it victories. In New Jersey, where the big fight is for the governorship, the Democrats have a big claim on the Negro vote. The same is true in New York City, where the battle is for the mayor's post. What the Republicans hope for is a noticeable shift of Negro voters that they can prepare to exploit in 1960.

Eisenhower got a fresh briefing on the business outlook this week. This was his first meeting with the newly created credit advisory group (BW—Sep.21'57,p23), made up of Treasury Secy. Anderson, Reserve Board Chmn. Martin, and Chmn. Saulnier of the Council of Economic Advisers. The general tone was that business still is strong, but with some of the inflationary factors that helped push prices up earlier this year now on the decline. Officials familiar with the briefing say that no quick change in the tight money policy was indicated. The attitude was described as one of "watchful waiting," with winter trends becoming the big influence on policy.

Keep an eye on Washington for 1958 business forecasts. The government insists that it isn't in the business of predicting trends. But actually it has to make predictions in setting policies for a new year, a new Congress.

The Agriculture Dept. outlook conference will be the kickoff. It's scheduled for Nov. 18-22. Conclusions will be in terms of what farmers can expect as to prices next year. But behind these will be forecasts on the general level of business.

A forecast on construction for next year will come out of the Commerce Dept. within another 30 days or so. The thing to watch for is the figure on homebuilding—whether recent gains can be expected to continue in the coming year.

The over-all wrap-up will come in December. That's when the Commerce Dept.'s Business & Defense Service Administration will take a look ahead on prospects for 24 major industry groupings. BDSA is resuming its forecasts after a lapse caused by reductions in funds and personnel. Advance word is that BDSA's report will be optimistic in terms of business totals in 1958. But hard going will be indicated for some lines, due to the steadily increasing competition for consumer dollars.



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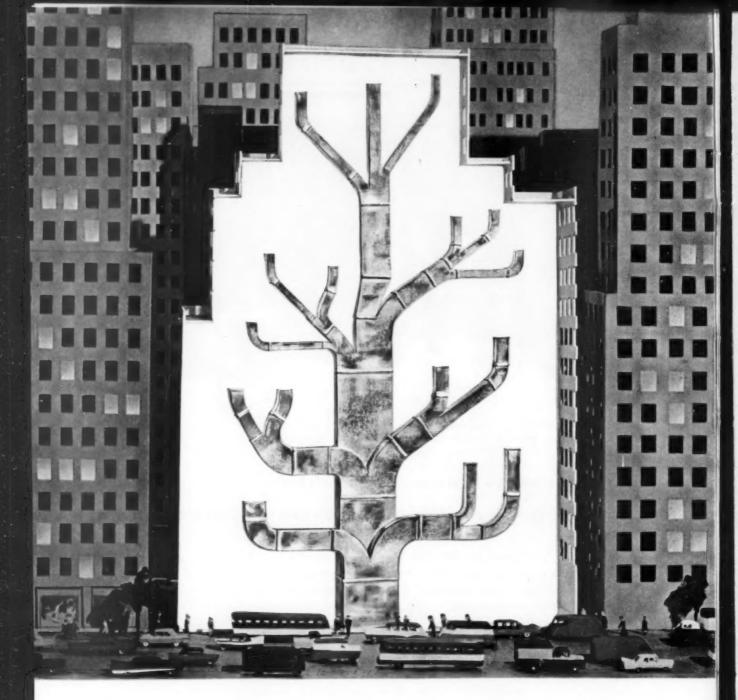
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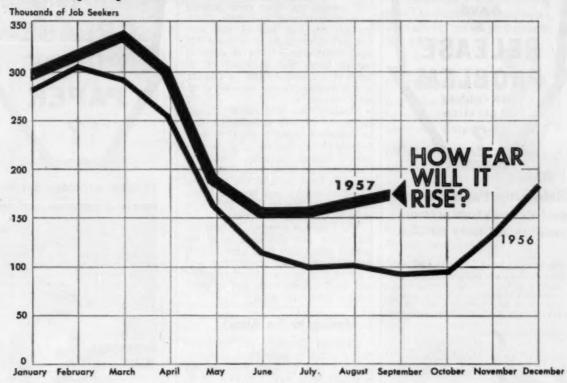
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Unemployment in Canada



Date: Dominion Bureau of Statistics.

OFUSINESS WEEK

Canada Fights Economic Pinch

Faced by a business dip and a probable postwar jobless peak—with fears of worse to come—Canada eases up on money and heads toward active government steps to halt the slide. How it fares is bound to have an impact in U. S.

The liveliest economic issue of the postwar years—full employment vs. price stability as the prime aim of national policy—is coming to a head in Canada. Despite extreme monetary restraint by the central bank, the cost of living is still crawling upward—but so is unemployment (chart).

Canadian economists, government officials, and labor leaders expect unemployment to set a postwar high this winter—between 450,000 and 600,000, or from 7% to 10% of the labor force. On Aug. 24—the date of the last sample survey of unemployment—174,000 Canadians were looking for work—69% more than were out of jobs last year at that time.

Canada's previous high mark in unemployment came in March of 1955, when 401,000 Canadians, 7.4% of the labor force, were jobless. The icy Canadian winters, plus the increasing shift of workers to construction in recent years, give Canada far wider seasonal swings in jobs than the U.S.

• Anxious Seat—But this year the coming winter rise in unemployment will get an added boost from slower over-all business activity. For the sad news is that the great 1955-56 expansion in Canada is over, and what probably will be known as the 1957-58 recession has begun. Thus far, it promises to beaside from the usual winter slump in employment—a mild contraction. Even this, though, will create a sharp political issue for the new Conservative government.

And if you probe only an inch or two below the outward Canadian composure about the mildness of the current dip, you discover something else—as BUSINESS WEEK did in a series of interviews in the past two weeks with top Canadian economic and financial talent in business, government, and the universities. You find growing and widespread anxiety that the dip could turn into something much more serious than anything Canada has seen since the war.

The reason: Canada took its last two recessions in the midst of the sensational expansion of Canadian industries, stimulated by heavy world demand. particularly from the U.S., for Canada's resource products. But now Canadians take note of slumping international markets for aluminum, copper, and other base metals, lumber and newsprint, oil, and other basic materials. On the other side of the scale, they see the tremendous expansion in capacity of their own resources industries. And weighing one against the other. they fear that the halt in the Canadian resources boom may spell more serious

• Canada and U.S.—Canada felt the 1949-50 and 1953-54 recessions less than the U.S. It went into them later, and



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But this year Canada went into a recession while the U.S. economy was still moving up. Our gross national product continued to climb slowly through the first half of this year. Canada's GNP declined by about 1% from fourth-quarter 1956 in terms of current prices, and by about 3% in terms of real output. And for Canada, a real unemployment squeeze is already certain.

• Meaning for U.S.-How Canada handles its 1957-58 recession can have an important impact in the U.S.-both because Canada and the U.S. are each other's biggest customers (this year Canada will buy about \$4½-billion worth of goods from us, and sell us about \$3-billion worth), and because Americans have a better than \$10-billion stake in Canadian investments.

The Canadian economy, in the coming period, may also serve as an important pilot plant; from what Canada does, Americans can observe how well a switch now in government monetary and fiscal policies works out in stemming a downward trend.

I. Moving to the Attack

Canadian observers are convinced that a switch in government economic policy is sure to come soon, in fact poncy is sure to come soon, in fact is already under way. Says Prof. D. E. Armstrong, of McGill University, a director of a leading research outfit, Economic Research Corp.: "Money should have been eased in June-but it is at last easing now. The reason I don't expect this contraction to be worse than a short and shallow one is that I assume that money will be fairly sharply and dramatically eased this fall and winter.

· Contrasts-Tight money today appears to have many more opponents among Canadian economists and businessmen than among their U.S. counterparts. Canadian labor, says Secy.-Treas. Donald McDonald, of the Canadian Labor Congress, has put a fight against tight money at the top of its "must" list for the immediate future. And the new Conservative government—as Prime Minister John Diefenbaker indicated to BUSINESS WEEKis less committed to a tight money policy than the Eisenhower Adminis-

Canada's central bank, the Bank of Canada-which includes on its board Deputy Minister of Finance Kenneth Taylor-seems slightly less inclined than the Federal Reserve to regard itself as a completely independent agency. So the Bank of Canada's governor, James E. Coyne, is unlikely to court a fight with the Conservative government, if a strict monetary policy, aimed

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at snuffing out the last of creeping inflation, would appear to frustrate government steps to counteract growing unemployment

· Move Toward Ease-The Bank of Canada keeps its plans pretty much under wraps, and makes virtually no use of Federal Reserve-type "open-mouth" policy to describe its actions and intentions. But Canadian money market experts conclude that the bank has already begun to move toward greater ease. The central bank's discount rate has been hitched to the three-month Treasury bill rate (it's reset every week at a figure 1% higher than the Treasury bill rate). The Treasury rate hit a peak last Aug. 21 at 4.08% (sending the Bank of Canada's discount rate up to 4.33%.)

Since then, the bill rate has come down to a range of 3.80% to 3.85%. Although a decline in the demand for funds is partly responsible, Canadian observers also detect behind the drop a switch in the central bank's open

market operations.

· Broader Steps-In its efforts to stem downward trends, the new Conservative government is unlikely to stop at monetary measures. It's very likely also to boost government spending and move for tax reduction. Gov. Covne himself. in his annual report of the Bank of Canada (BW-Apr.13'57,p121), makes a plea for greater use of fiscal policy.

Most Canadians who know the leaders of the new government feel sure that it will take prompt fiscal action to curb developing unemployment. Arthur J. R. Smith, until recently chief economist of Canada's National Industrial Conference Board, observes:

Such a move would be supported widely by both labor and business. Canada's business community isn't strongly anti-Keynesian like yours. And this new government is particularly sensitive to the unemployment issue; it wants to get rid of its old label as the party of unemployment, which it got in the 1930s when it was last in office." • Political Spur-The Conservatives have a good reason right now for trying to avoid a charge from the Liberals (whom they ousted from office by only a slight margin last summer) that they are indifferent to coming unemployment. They will almost certainly have to face the Liberals in another general election next spring or summer. And they will want to safeguard their newly won reputation with the voters as the common people's party-a title that even their defeated opponents admit they have snatched away from the Liberals.

"That's how they got into office this time," laments Elmore Philpott, a Liberal from Vancouver who was defeated in last summer's election. "They outflanked us on the left by promising Fresh from big success in 1957, undisputed leader in booming swimming pool industry announces dynamic new program for 1958.

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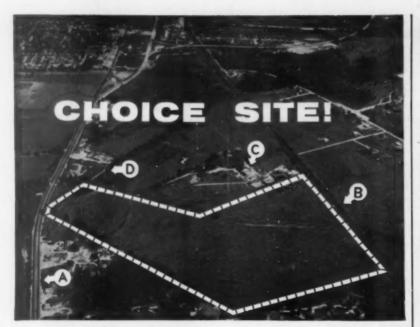
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"... corporate profits were down \$46-million in the second quarter ..."

CANADA starts on p. 59

higher pensions to the old people, while we Liberals were being supervirtuous about budget surpluses to curb inflation. And when they give those higher pensions they're going to be awfully hard to lick."

• In the Wind-Prime Minister Diefenbaker (BW-Sep.21'57,p106) confirms this view of a Conservative leader determined to sell his party as the common man's friend. He told BUSINESS WEEK that he had been watching the rise in unemployment and was studying measures to prevent it from getting worse. He noted that his government had already acted to support housing construction by putting up an extra \$150-million for mortgage loans. And the Conservatives have announced their intention to boost old age pensions by \$9 to a figure of \$55 a month.

It is also widely rumored in Ottawa that Minister of Finance Donald Fleming is drafting a tax cut that he means to submit to Parliament soon. But how much of a tax cut it will be remains to be seen—for the Conservatives have in the past taken a strong "balanced budget" line, and Fleming appears unlikely to have much of a surplus to play with. He'll be kept on a tight tether by the possible decline in government revenues resulting from a business slowdown and heavier unemployment, and the likely rise in total government outlays.

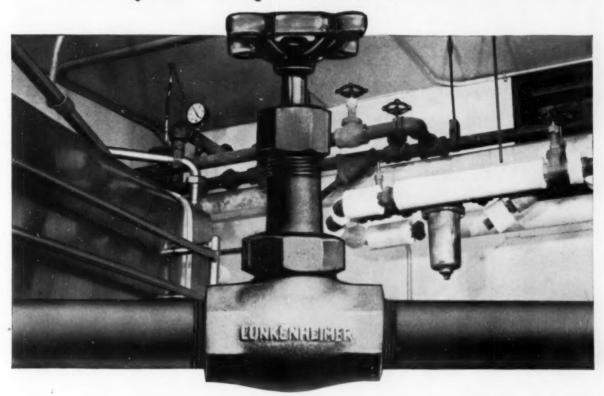
Some slip in revenues seems certain—for corporate profits were down by \$46-million in the second quarter, and the Canadian corporate income tax (47% on profits over \$20,000) is a big revenue producer.

II. How the Future Looks

Despite the great to-do over the Prime Minister's press conference remark that it would be desirable to divert 15% of Canada's trade from the U.S. to Great Britain, and despite a good deal of political sound and fury about U.S. investments in Canada, the Conservatives show no intention of undertaking radical switches in Canada's trade or economic development policies—unless a genuine economic catastrophe, which is not expected, overtakes them.

The consensus, inside and outside of government, is, as one minister put it, that "we are in for something of a shakedown, a rolling adjustment, a time for consolidation." It's widely

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recognized that the capital spending boom is over, that consumer spending has weakened, especially for durable goods. (Consumer spending showed a drop in the second quarter of this year; only once before in the entire postwar period did it decline.)

There's concern about excess capacity in a number of lines, both in basic materials and in manufacturing industry. And there's real pain (and anger at the U.S. for its agricultural surplus disposal program) over the heavy congestion of unsold wheat in grain elevators. The government plans action to brace up farm prices and farm in-

· Favorable Factors-But the picture isn't all black. Most service industries, except rail transportation and electric power, have continued rising. Output of uranium and nickel, heavy transportation equipment, leather, chemicals is still on the upgrade. Housing construction is recovering. And heavy capital outlays for the Trans-Canada gas pipeline, the St. Lawrence Seaway, provincial and municipal highways, and other public facilities-plus other industrial work in progress-will prevent much of a fall in capital expenditures in the months ahead.

The general feeling is that the end of the resources boom will be at least partially balanced out by continued improvement in transportation and communications, and probably some increase in manufacturing (this will get a fillip from the St. Lawrence Seaway). Pressures for boosting tariffs against imports of competing U.S. goods may possibly bring a further stimulus to

Canadian production.

• Calm—With Reservations—Most Canadian businessmen are taking the shift in the weather calmly. The president of a major chemical company told BUSINESS WEEK that he looked for "a breathing spell in which to digest the progress of the last few years." man thought the pause might well last a couple of years. But he thought that such factors as population growth, family formation, and technological advances are sufficiently strong that-"coupled with sound government policies"-the adjustment won't be severe. But, he added, much will depend on developments outside of Canada.

That's the worry that Canadians are loath to stare squarely in the face: continuing weakness over the next few years in foreign demand, that might shock an economy so heavily based upon investment in the export industries. As a Canadian economist, Prof. Clarence Barber of the University of Manitoba. put it, "The Canadian economy adjusted with surprisingly little difficulty to a major increase in the investment sector; it may find it less easy to adjust to a decline." END

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How the U.S. Stands

When the Russians put up a space satellite last week they showed they had a significant lead in missile development. And that has raised deeply disturbing questions:

How much progress has this country actually made in auided missiles?

Why aren't we farther along? What's been holding us back?

And what are the problems anyway? What's so hard about a missile?

In this report, BUSINESS WEEK answers these questions for its readers.

CHISWICK is a lower-middle-class residential section of London. On Sept. 8, 1944, a bomb exploded there. Bombs had been exploding all over London for four years, but this one was terrifyingly different. It had simply appeared and exploded—no plane overhead, no whistle of a falling object.

A couple of minutes earlier, more than 100 miles away on the French coast, a German V-2 rocket had spouted fire, climbed 50 miles into the air, tilted over, and shot toward London. It was going about a mile a second—four times the speed of an artillery shell, too fast to be heard, to be detected, or to be intercepted.

One of the two revolutionary weapons of World War II had made its appearance. It was still a year before American observers at Alamagordo, N. M., could conclude that they had succeeded in developing the other one.

The V-2 was a remarkably successful device. In the following six months, 1,120 of them were fired against London, and 2,500 were fired against targets in Europe. Another thousand were fired for test and training, and after the war hundreds more were brought

to the U.S. and used for research.

One thing kept the V-2 from being almost a decisive military weapon: It needed a nuclear warhead. Even though it was proof against interception, it was an inefficient way to deliver ordinary explosives; the U.S. Air Force could do more damage in one night's raid on Berlin than all the rockets that hit London.

• Crucial Weapon—At the end of the war, the rocket technicians were convinced that the team of atom bomb and rocket could be the crucial weapon of the future. It seemed clear to them that the V-2 contained all the principles needed for an invincible weapon that could span continents, could reach from anywhere on earth to anywhere else on earth. All it would take was scaling up in size, refinements, engineering improvements. Hundreds of the top men from the German rocket team went to work on that for the U.S. military, hundreds of others for the Russians.

The military problem looked so nearly cut and dried that the imaginative thinking ran to the next step of space satellites and interplanetary travel. As early as 1947, the Pentagon's Joint Research & Development Board seriously considered a project to put up an unmanned satellite—and rejected it because the \$100-million cost estimate seemed too high. (Official cost of the Vanguard satellite project to date: \$110-million.)

I. How Far Have We Got?

Thirteen years have passed since the first V-2 landed. That's time enough for a lot of development and discovery. Within those years, for instance, we



on Guided Missiles

have exploded the first atom bomb. refined it down to a convenient weapon in a range of sizes, and have produced it in the thousands: have developed from scratch a superbomb more than 100 times as powerful, in turn have refined that into an easily handled size and have put it into substantial production.

What have we achieved in missiles

during that time?

The Narrow View-Looked at in one way, not much. If you examine the table of U.S. missiles that BUSINESS WEEK published last week (BW-Oct. 12'57.p41) here's what you find:

In terms of weapons being produced in quantity and immediately available for use in war, the most advanced U.S. descendant of the V-2 is the Army's Redstone. This is a bombardment weapon with a range of something over 200 miles, a nuclear warhead, a guidance system. There are several similar weapons of shorter range, including some to be launched from aircraft.

There are smaller weapons of this general type, with ranges of 20 miles or so, for shooting down aircraft; the Nike is the best known. These are already beginning to replace some

fighter aircraft.

Besides that, there is a whole family of weapons that are not descended from the V-2 at all, but from another World War II development, the American bazooka. This is a grown-up skyrocket burning gunpowder or other solid fuel, and containing a minimum of machinery. These are used by infantry or carried in aircraft, and are able to throw what amounts to an artillery shell distances up to 10 or 15 miles without needing heavy cannon.

Finally, we have another type of missile altogether, descendants of another German development, the V-1 flying bomb. These are small airplanes in which a guidance system replaces the pilot. The Matador is the most familiar. They have ranges of several thousand miles, but fly at airplane speeds and therefore lack the invulnerability that has made people think of rockets as "ultimate weapons."

• Turning Point-Though accurate, that discouraging picture falls short of the truth. For right in the present weeks, the missile business is at a turning point. Within a few months, several much more advanced weapons can be expected to emerge from a development status and demonstrate themselves ready for large-scale pro-

Jupiter and Thor are a pair of very similar missiles, developed by the Army and the Air Force, respectively. Both will operate in the 1,500-mile range, carry nuclear warheads, have guidance systems that can put them within a few miles of target. Jupiter has already been flight-tested successfully; it is unofficially reported to have far exceeded specifications with a range of nearly 3,000 miles. Last week, the second complete prototype of the Thor was flown successfully.

One of these two, Jupiter or Thor, will eventually be selected for largescale production, perhaps in a couple

of months.

Atlas, an Air Force development. is the true intercontinental missile with a range of over 5,000 miles-the weapon the technicians began thinking about after the success of the V-2, the one that will eventually take the place of the long-range bomber. Prototype Atlases have been built, but so far none has flown successfully.

· On Beyond-Racked up behind these imminent achievements are laboratories full of potential improvements-new fuels, tougher materials, more sophisticated guidance. Over the coming years, this work will produce missiles with even longer range, missiles that are smaller and lighter and more reliable. that can get more certainly and accurately to their target. Some of this work will be described later in this

A key fact about all this, though, is that the promise of what is now in the laboratories is a promise of step-by-step improvement. No major breakthroughs are in sight-and, correspondingly, no big breakthroughs are needed to permit us to put up a full arsenal of inter-

continental guided missiles.

In the fall of 1957, the rocket art seems to have got far enough so that only a few small, almost trivial problems stand in the way of a workable strategic weapon-plus a lot of fairly straightforward engineering and development to perfect it.

· Defense-Farthest off, probably, but certainly most important of all, is the beginning of a defense against long-

range missiles.

The key step toward such a defense came a few weeks ago when the Air Force was able to announce that Columbia University had developed a new kind of radar-a detection system not limited by the horizon as present radar is, a system capable of detecting a moving object as much as 3,000 miles away. This can make all the difference. A hydrogen warhead is soaring toward you through space at three miles a second. If you can detect it at such distances you may have as much as 15 min, in which to defend yourself, Conceivably in that time you could compute the trajectory in which it is locked, send up another rocket to meet it on its path, find it, and destroy it.

It will be several years before this laboratory system is fully practical, but obviously it will get high priority.

Enthusiasts for this system are already arguing that the long-range missile is no ultimate weapon at all, that by the time weapons of the Atlas type are available in quantity they may already be obsolete.

II. How Well Have We Done?

That's the record of U.S. accomplishment on missiles. Is it good or bad?

It is the inherent and exasperating nature of research and development, as nearly every businessman knows, that it is unpredictable and is very nearly impossible to appraise with any confidence. Nevertheless, some comparisons are inevitable.

Compared to the other great postwar developments-the atom and hydrogen bombs-missile development does not look impressive. It's even arguable whether today's missiles represent any more improvement over the V-2 than today's jet bombers do over the wartime B-17.

But the devastating comparison is this: The Russians have done better.

That crucial turning point which the U.S. hopes to reach this fall or next year, the arrival of real strategic bombardment missiles, has already been reached by the Russians. It may have • Evidence—There is good evidence that the Russians have been test-firing missiles comparable to the Jupiter and Thor in substantial numbers for a year or more. The evidence is mostly in reports reaching U.S. intelligence services, and U.S. industry and trade press people of sightings of such missiles by military observers in the Scandinavian and other countries on Russia's borders.

More impressively, evidence has been circling overhead for all to see that the Russians have achieved a workable intercontinental missile, or the next thing to it. Expert analysis of the known facts about Sputnik, the Russian artificial satellite (BW-Oct.12'57,p39), leaves little doubt that the satellite ball and its third-stage rocket rode into the sky on the nose of a long-range military weapon as good or better than the U.S. Atlas will be when it finally flies. The only question mark is whether they



ENGINE trouble. An Atlas ICBM falls in flames after test flight.

have solved the problem of "reentry," of getting a warhead out of space and back into the atmosphere without burning it up. They have not demonstrated in public that they can do this, but they say they can—and on the recent record it is not safe to pooh-pooh Soviet claims.

• Why—All in all, the U.S. record on missiles may or may not be blameworthy, but it is certainly disappointing.

Why are we not farther ahead?

If you talk, as BUSINESS WEEK reporters have done, to a wide selection of people close to the program, military and civilian, official and unofficial, you find their views converging onto two explanations and an excuse.

Explanation 1: We started late on long-range missiles. It was not until about 1952—five years ago, seven years after the end of the war—that we gave serious attention, substantial money, or high priorities to this work. There was development of short-range rockets for troops and aircraft and on some antiaircraft missiles. But long-range weapon development was a side issue.

Explanation 2: Organization of missile work has been diffuse and confused. No one person or organization has ever had the sort of central responsibility for missile development that the Manhattan District and then the Atomic Energy Commission have had on nuclear weapons. Instead, the job has been split and re-split among the



M I S S I L E S SPECIAL REPORT (Story starts on page 66)

three military services and amongquite literally—thousands of companies and universities, and all enmeshed in a maze of coordinating committees. This was done more or less intentionally, and it is not, of course, an unmixed evil. Chances are that this approach has produced a wider variety of information, a range of approaches to the problems, and it may quite possibly pay off in better weapons in the future. But there is general agreement that all this has militated against quick development of militarily usable hardware.

Excuse: The job is harder than it looks, harder than even the experts expected 13 years ago. Even though the V-2 had met most of the problems, in principle at least, scaling up its size and power and refining its accuracy has involved fantastically many and difficult jobs of engineering development. In a sense, the very fact that it has been a matter of engineering rather than basic scientific research makes it take longer; there has never been a moment when some exciting discovery could give the program a long jump ahead.

2. The Trouble Spots in Missiles

or until well into the year 1952 did the U.S. begin putting substantial amounts of money into rocket and missile development. That year, almost \$800-million went for research, development, and production, a sizable boost from the \$169-million of the previous year and the \$21-million of fiscal 1951.

Yet the hunt for a military missile had started in the U.S. at about the same time that the V-2 was in development in Germany. California Institute of Technology's Jet Propulsion Laboratory had turned out a series of three small rockets, none more than 3 ft. long; had tested them, had found them wildly inaccurate. Almost six months before the Germans fired their first V-2 against London, CalTech had learned something from the midgets' failure, built and test-fired the U.S.'s first WAC-Corporal, a 16-ft., 665-lb. rocket. But it, too, was inaccurate

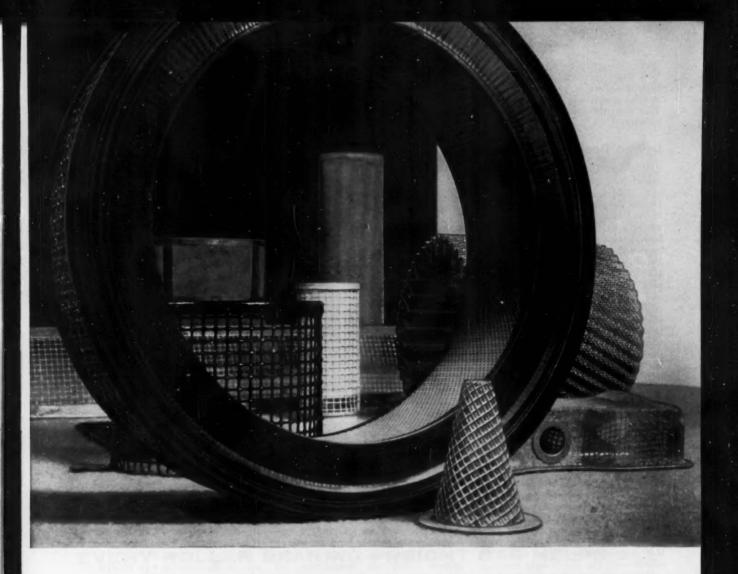
• Hybrids—Research lagged then until after the war. With peace came shipment to the U.S. of stocks of unused German V-2s. In 1946, the Army's missile men mated the two, simply mounted a WAC-Corporal atop a V-2 for upper-air research. They fired the hybrid, and its second stage reached a

speed of 5,000 mph. and an altitude of 244 miles. Not until this year have U.S. missile men fired a rocket that has managed to break that altitude record.

Through the late 1940s, as captured V-2 stocks started dwindling, the U.S. put a little more money into rockets. Always the emphasis was on developing bigger and better rockets for upper-air research. First came the Aerobee, produced by Johns Hopkins University and Aerojet Engineering Corp. Next was Viking, ordered by the Naval Research Laboratories from Martin Co. This was designed to replace the exhausted stock of captured V-2s.

From this rocket building and testing the U.S. gained knowledge, but no new weapons. Since those research rockets were intended only to zoom into the upper air and to sample cosmic radiation, atmospheric density, and so forth up there, they required only the simplest system to guide the missile and control the behavior of the engines.

 Impetus—Then came Korea, and the era of massive military budgets. Slowly at first, then with a sudden boost, money was pumped into the missile program. The search for guidance and control systems became the missile men's prime concern. Yet not until 1954 did the



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NATIONAL



STANDARD

U.S. begin spending at a rate of more than \$1-billion a year on missile research, production, and development. This year, the missile bill has hit \$3-billion.

I. Who Does the Work?

Ever since the war, there have been intermittent proposals to set up some sort of Missile Force in the Defense Dept. Enthusiasts have suggested a tourth service independent of the existing three. Both Army and Air Force have volunteered enthusiastically and repeatedly to take on the complete burden. But the decision has always been to let all three services go ahead—partly to get the benefits of competition and alternate lines of development, partly because each service was too politically powerful and too unyielding to be overridden.

Efforts have been made to divide up the work rationally. At one stage, the Air Force was supposed to be limited to missiles with wings, such as the Matador, on the grounds that these were early airplanes with the pilot left out. More recently, the Air Force was supposed to have jurisdiction of everything with strategic rather than battlefield range. But in practice, each service has worked on a whole series of missiles, with ranges from the shortest up to thousands of miles. Only exception is the intercontinental missile, which is an Air Force responsibility.

 Army—The Army got into the missile game earliest—perhaps because that seemed its only entry into the pushbutton gee-whiz world in which the aviators and the sailors were reveling.

Unlike the other services, the Army has concentrated its work and kept most of the engineering and development in its own hands. In the mountains of Alabama overlooking the Tennessee River it has set up a missile center at its Redstone Arsenal. Beginning with a core of "captured" Germany rocket technicians, this has become a vast place where you can hunt coons one hour and monitor a supersonic wind tunnel the next, and where, every so often, the earth shakes as a big rocket engine somewhere begins to fire.

Here some 2,500 scientists and technical men of many nationalities and hundreds of specialties carry most of the Army's missiles up to the point where they are ready for production. At that point, commercial contractors are brought in—Chrysler, North America, and Sperry Rand, for instance, on the Redstone and Jupiter.

The fact that, as of the moment, the Army has the most successful longrange missiles to its credit is a strong argument for this sort of centralization.

· Navy-The Navy, too, does some of

its own missile development and engineering. Like the Army, it has traditionally developed its weapons in its own arsenals. Its Bureau of Ordnance developed the small air-to-air Sidewinder; its Bureau of Acronautics, the Sparrow 1. And the Navy's 1,500-mi. Polaris, is being engineered by a joint group from Navy's Ordnance, Aeronautics, and Ships Bureaus, called the Special Project Office.

Both Navy and Army have called in the major universities to help in development of the shorter-range weapons. Johns Hopkins' Applied Physics Laboratory brought Talos and Terrier up to production for the Navy; Cornell's Aeronautical Laboratory handled La-

Crosse for the Army.

• Air Force—Tradition wasn't a question when the Air Force moved into ballistic missiles. For \$25-million a year, the Air Force has hired Ramo-Wooldridge Corp., the West Coast electronics specialists, as its "systems engineering contractor." This title gives Ramo-Wooldridge responsibility for the entire development of the Air Force's Thor IRBM and Atlas and Titan ICBMs. Ramo-Wooldridge watches over the prime contractors, who engineer each major component: Convair for Atlas' hull, Arma for Titan's guidance system, North American Aviation for Atlas and Thor power plants. Ramo-Wooldridge itself produces none

of these components.
• First Maze—Once any phase of its missile work passes into the hands of contractors, each service sends a uniformed group to ride herd on the civilians. Here starts a maze of committees piled on committees, of coordinators overlapping coordinators.

To push Atlas through its tests and into production, the Air Force Research & Development Command's Ballistic Missile Div. oversees Ramo-Wooldridge's supervision of the prime contractors. With the Ballistic Missile Div. go officers of the Strategic Air Command (which will use the finished product), the Air Materiel Command (which will handle procurement and production), and the Air Training Command (which will instruct the men who'll eventually fire the missile).

Progress reports flow back to the Pentagon. There, the committees and coordinators proliferate. Reports on the Atlas, for instance, go to the Defense Secretary's Ballistic Missiles Committee, made up of the Assistant Defense Secretary for Research Engineering, the Assistant Air Force Secretary for Research & Development, and the Army's R&D Director. The committee is headed by William M. Holaday, the Defense Secretary's Special Assistant for Guided Missiles.

If there's a problem for the committee to solve it will, likely as not, turn



M 1 S S 1 L E S SPECIAL REPORT (Story starts on page 66)

it over to a group called the "Ballistic Missiles Alternates." In the words of one of the senior group's members: "The 'Alternates' determine whether the projects are sound and are on schedule, and point up the problem areas which need more effort. On the basis of their findings, we make our recommendations." The recommendations go back through Holaday to the Defense Secretary.

The reports that reach the committee and the "alternates" also go, of course, to the uniformed chiefs and the civilian secretaries of each of the services. These six men can reach the Defense Secretary as easily as Special Assistant Holads. Indeed, when former Special Assistant Eger Murphree had to decide whether to drop work on either the Army's Jupiter or the Navy's Thor, and ruled in favor of the Thor, Army Secy. Brucker took up his service's cause and persuaded former Defense Secy. Wilson to keep both Thor and Jupiter going.

Compounded Confusion—These several sets of committeemen, alternates, and coordinators by no means have control of the whole missile program. From Holaday on down the line they are concerned only with IRBMs and ICBMs.

Alongside them are several other sets of coordinators who control missiles with ranges less than 200 miles.

The Assistant Defense Secy. for Defense & Engineering, Paul D. Foote, coordinates these coordinators. His Director of Guided Missiles, D. W. Patterson, heads the inter-service committee that reports to Foote. (As a means of integrating the whole missile program, Patterson wears a second hat as Holaday's chief of technical staff, and Foote is also a member of the long-range missile committee.)

When Foote's short-range missiles committee finds that projects under its control face technical difficulties it calls on the Technical Panel on Missiles & Aeronautics. This group, made up of 100 scientists and engineers from the universities and industry, will advise on those problems.

On the other side of this maze one meets, again, the Defense Secretary—and on his right hand the Defense Comptroller—who must in the end, attempt to decide which missile projects shall get the greatest effort and which shall get one at all.

(Turn to page 72)



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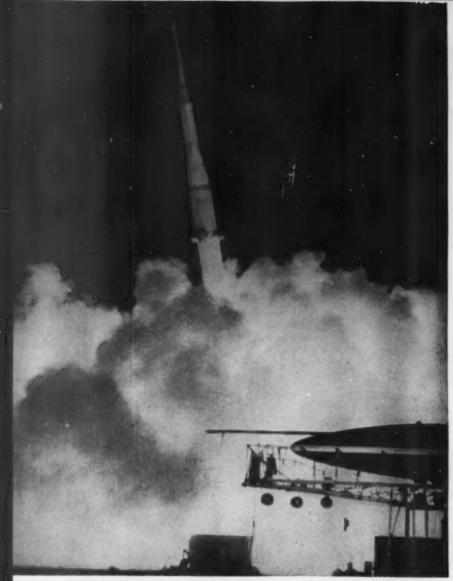
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TEST MISSILE, Lockheed's X-17, is for studying reentry. Here it begins . . .

The Short Violent CareerOf a Guided Missile

AMERICANS are accustomed to think of engineering problems as inherently soluble and soluble fast. If you want a piece of machinery and are willing to pay the price, you hire an engineer and tell him to design it.

So the delay in missiles seems puzzling. It's an engineering problem. It doesn't call for discovery of any new principles of nature. Except perhaps for the guidance system, it hardly even calls for the invention of new devices. No one is waiting for any big research breakthrough.

Basically, the assignment is simply to do bigger and better something that has already been done.

What makes that easy sounding job

a hard one is that a long-range missile is a device with hundreds of interlocked major components—and each component is dependent for its success on the proper operation and coordination of all the others. So to get an idea of what's involved, you need to take a fast over-all look at the structure and career of a typical weapon.

The Pentagon publishes few blueprints. So the missile we will look at is one called Venus, because that name is unlikely ever to be used for a real missile. But Venus has enough in common with her less hypothetical brothers to be illuminating.

• There She Stands-Ready to fly, Venus stands erect on her tail fins in



M I S S I L E S SPECIAL REPORT (Story storts on page 66)

the middle of a concrete launching platform, surrounded and braced by high metal guard rails. Under the flood-lights, she is a brilliant white-painted needle standing as tall as a six-story building and 8 ft. thick. She weighs about as much as a big diesel locomotive. A bit more than half way up her length she tapers abruptly to 6 ft. Her nose is blunt and rounded.

That's about all there is to see from outside except the four 2-ft. stabilizing fins at the base. Projecting out from each fin is a movable rudder, and projecting inward are smaller stubbier rudders to deflect the jetstream from the engines. (Venus' designers thought some of eliminating the rudders, and tilting the motor on gimbals instead; they gave that up when they decided she would need two motors.)

As she stands there, she has cost something over \$1-million.

To see where the money went, you have to look inside.

Tucked between the fins at the base are two of Venus' three motors. Ignoring a lot of complications, each of these motors is a metal tank in which fuel can burn, each about 3 ft. across and 6 ft. long. From the bottom of each emerges a stub of pipe about a foot across and flaring into a nozzle. Through these nozzles will surge the hot gases from the burning fuel. Each engine, recoiling from the hot gases, will give Venus a 60-ton thrust.

A few feet forward of the engines are four long fuel tanks, two for each engine. One tank in each pair holds red fuming nitric acid; the other holds aniline, a petroleum-derived chemical that is used industrially as a dye. Squirted together into the engine firepot and ignited, the two will react explosively—"burn" in effect—generating enormous volumes of flaming hot gas to drive out through the jet tubes.

• Maze—The space between engines and tanks is a maze of machinery.

Fuel lines from the tanks to injection nozzles in the engines, of course. On each fuel line a little pump, only a few inches across but turning at 40,000 rpm. and able to hurl several thousand gallons of fuel through the lines within a couple of minutes. Driving each pump a little gas turbine, itself a high-performance engine of perhaps 4,000 hp. tapping its fuel off the main fuel lines. Speed controllers for each turbine; those are the throttles that maintain the proper fuel mix for each engine and keep the performance of the two en-





Meet John Drick, Division I

an oil man's banker

Luck—hard work—ability—ambition—all these are vital to a successful oil man. But to John Drick, Vice President of Division I at The First National Bank of Chicago, methods, money and careful planning are the elements that sustain success.

In 1954 John Drick was approached by an oil producer and drilling contractor. After beginning with \$20,000 in 1946, the man's firm had achieved success in finding oil. But there were "growing" pains resulting in financial problems. Could Division I help him?

John Drick thought so—and formulated a plan. Loans were set up from our bank which could be serviced out of earnings and still leave funds for exploration and modernization of equipment. Frequent conferences were held involving budgets and cash forecasts—to accomplish an overall balance of the operations of the various divisions of the company.

Today, after three years' association, this customer feels that the guidance and financial assistance given him by Division I have been, in a large measure, responsible for his present success and good financial standing. From retained earnings and a recent sale of equity securities, his firm's present net worth is in the millions.

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gines balanced. Electric motors to operate the speed controllers on order from a guidance mechanism up forward. Meters to report on fuel flow to the guidance mechanism. More electric motors to operate the steering rudders. Plus other apparatus that you can only learn about from classified documents.

• Split—Forward of the fuel tanks you come to the place where Venus' hult tapers. There is a joint here, and above you, actually, is another complete rocket. For Venus is really two rockets, a second stage riding on top of a first stage.

This is a terrible nuisance. It almost doubles the complexities of the weapon, more than doubles the chances of something going wrong. Venus' designers would love to avoid all this, but here is what they are up against: Most of the work the rocket engine has to do is simply to push itself and its fuel tanks, and the hardest part of the work is at the beginning, down where the air is dense and resistant. If, part way through the flight, you can discard empty fuel tanks and unneeded engine capacity, you gain needed efficiency.

The Army's Jupiter began life as a three-stage rocket, but since then the technicians at Redstone have improved their engine enough to get along without the efficiencies of multi-stage construction and use a simpler and therefore more reliable single-stage unit. But Venus is a bigger dragon than Jupiter, and its engines need all the help they can get.

• Second Stage—Venus' second stage is not too different from her first. There is only one engine, but it has a 70-ton thrust. In one of the two fuel tanks is fluorine, in the other unsymmetrical dimethyl hydrazine; trickier, more corrosive fuels, these, than what's in the first stage, but they furnish the needed extra thrust. There are no external rudders or fins because they would be useless in the near-vacuum where this stage will operate; up there, Venus will steer by four little deflectors mounted in the blast stream.

Between the second-stage engine and its tanks are another set of pumps, turbines, meters, motors—plus a source of electricity to run Venus' electric and electronic equipment. Venus uses a generator spun by another turbine, this one driven by the explosive decomposition of hydrogen peroxide.

Forward of the second-stage fuel tanks is Venus' brain—a complex assemblage of gears, motors, transistors, lenses, wires, all about the size of a large suitcase. This guidance mechanism has to do the jobs that would be done on a bomber by the pilot, the engineer, and the navigator. It must keep Venus flying right, must monitor the engine performance, and—most difficult of all—must keep track at every instant of exactly where she is and how

fast she is going and compute a course that will get her to her destination.

For double assurance, Venus does this last job two different ways at once. She does it the same way the bomber's navigator would, by celestial navigation. As she sits now on the launching pad, Venus has her pointers sighted on three different stars. As she flies, delicate apparatus will keep them sighted, will continuously measure the angles among the three, and so will be able to compute her position.

In case she should lose sight of the stars, Venus also uses something called inertial guidance (BW-Sep.14'57,p54). Introspectively, she senses the jerks and thrusts every time she changes speed or direction, counts the seconds as they pass, and so keeps track of her position by a method equivalent to a navigator's dead reckoning.

• Warhead—Now we are some 70 ft. up in Venus' nose. Here there is space that could contain a hydrogen bomb—itself no simple mechanism, but one that is the concern of AEC rather than of Venus' makers. This time there is a box there, instead, of the same size and weight, containing meters, amplifiers, and radio devices that will try to keep track of Venus' career and report back to base about what goes on.

Surrounding this space is a tough and secret cone designed to withstand the fierce friction and heat Venus will encounter in the last moments of her flight.

I. Flight into Space

Now Venus is ready to begin her short, violent life.

In the blockhouse the countdown man makes his count and presses the button on the last one. Out on the pad, a billow of yellow smoke pours from the base of the rocket, envelops all but the upper few feet. A vast roar begins, so loud that even with carplugs in you don't hear it as a sound but as a pain in the ears and a shaking of the ground. For a couple of seconds nothing seems to be moving; then you can see that, slowly, Venus is climbing up out of the smoke. Slowly, it seems, she rises. After 10 seconds she is a mile in the air and traveling at airplane speed, but it looks as though she were hanging there. ready to fall back on the blockhouse. Then, visibly, she shoots away.

Now it is up to Venus.

Imprinted on her brain is the location of a spot in space that is almost 200 miles up, a little over 300 miles to the southeast. It is her job to pass within a mile or so of that spot, heading in exactly the right direction and moving at exactly the right speed.

For the first 30 miles she travels straight up; she wants to get out of dense air just as quickly as possible. At



M I S S I L E S SPECIAL REPORT (Story starts on page 66)

the very start, Engine 1 is delivering several hundred pounds less thrust than Engine 2. Venus starts to tilt, but she throttles back on No. 2 and straightens up, meanwhile starts shifting the mix on No. 1, hunting for better output. Fifteen miles up, a gale of wind is driving to the west. Venus shifts her rudders and leans imperceptibly into the wind, canceling the drift.

Thirty miles up, the inner rudders twist, biting into the jet stream, and Venus tips sharply to the southeast. A few seconds later, the firestream from her tail turns to black smoke and dies. At the same instant, a ring of detonators around her hull separates the two stages; a puff of smoke fills the space between; the smoke becomes fire; and the second stage darts ahead. At this point a little more than two minutes of Venus' life have passed, and she is traveling at well over a mile a second. The abandoned first stage is still rising but will soon begin curving down.

Some two and a half minutes later, Venus passes through her target point heading southeast and upward at nearly three miles a second, and the flame behind her flicks out. Her machinery has done its job and has no further control over her course. This equipment is cut loose now and from here on her warhead travels as though it had been fired from a gigantic cannon with its mouth at her 300-mile-high target point, her movements governed by the ballistic laws of gunnery. That's the reason she and her brothers are called ballistic missiles

Now begins Venus' quiet time. For almost half an hour she will sail through empty soundless space. For the first 10 min., she is climbing and losing speed. Then, some 400 miles up and more than 2,000 miles from home, she tilts gently and begins the long curving accelerating fall toward earth.

The last 5 min. of her life are violent. This is when she smashes back into the atmosphere at meteor speed, glows with a heat that burns away most of her structure, a heat that only the tough nose cone and what it protects can withstand.

Far out on the South Atlantic, the radar operator on a picket ship traces Venus' final plunge on his screen, jots down the coordinates of her splash, and passes the sheet to the communications officer.

Back at the rocket base, young technicians with crew cuts shake each other's hands jubilantly and start load-



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says E. WRIGHTSON CHRISTOPHER, President, Rust Craft Greeting Card Company.

"We selected Blue Cross 19 years ago after investigating a number of hospital care programs. We liked the broad, nationwide scope and local on-the-spot service of Blue Cross. Our company, operating throughout the country, has personnel constantly traveling. Blue Cross gives them, as well as our home office workers, realistic, worry-free protection."

Blue Cross Plans, serving locally coast to coast, bring Americans this famed program for prepayment of hospital care... the only one officially approved by the American Hospital Association.

B LUE CROSS PLANS today safeguard 54 million people—dramatic proof that truly important protection is delivered. Each year millions more enroll through employee groups.

Meets company aims effectively.

Blue Cross wins employee good will because the Blue Cross objective is to provide help to employees and their families in terms of hospital care, rather than dollar allowances.

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An employee needing care simply presents his Blue Cross card upon entering a participating hospital. Blue Cross handles the details of payment. You have no claims to file. No follow-ups or paper work to add to company overhead.

Flexible to fit any welfare program. Blue Cross adapts easily to employee benefit "packages.", large or small. Adds value to pension plans, too. Employees may keep Blue Cross when they leave or retire.

Protects at low cost. All money received by Blue Cross Plans, except for low expenses, is set aside to pay for hospital care. Last year over a billion dollars was paid out for members' hospital care.

For full facts on a more efficient and effective hospitalization protection program for your company, contact your local Blue Cross Plan. Or write Blue Cross Commission, Dept. 618, 425 North Michigan, Chicago 11, Ill.

A few of the 300,000 companies with Blue Cross

COLUMBIA BROADCASTING SYSTEM
CROWN ZELLERBACH CORP.
GENERAL MOTORS CORP.
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SCOTT ATWATER MFG. CO.
VICK CHEMICAL CO.





M I S S I L E S SPECIAL REPORT (Story storts on page 66)

ing their briefcases with the big reels of magnetic tape that carry Venus' short, expensive autobiography.

II. The Whole and the Parts

Venus' history will provide the technicians with lessons in how to improve her descendents. But for the layman, the clearest lesson is this: the fiendishly interconnected nature of each tricky little part and problem. Does one element in the complicated system go wrong, the whole laboriously assembled weapon is a total loss. For instance:

• The most recent test of the Air Forces' ICBM, the Atlas, apparently failed because one fuel line to one engine clogged or burned out. At any rate, one engine began to smoke, and the rocket fell sideways; it was able to right itself, presumably by throttling back the other engine, but then it lost so much power it had to be destroyed.

• Two successive early tests of Army's Jupiter IRBM were complete failures because, after the fuel had been partly consumed, what was left in the tanks began sloshing and threw the missile hopelessly off balance. Baffle plates in the tank solved that.

The difficulty in developing longrange guided missiles is the solution of an endless chain of individual problems.

There is worse yet. It is not enough to strengthen each link; it must be strong enough but not a bit more than enough. For the designer is dealing with a vehicle where an extra pound of weight in the equipment can add thousands of pounds to the fuel requirements. It is a vehicle that must be absolutely reliable—for about 5 min.

• Weighing the Weakness—A few weeks ago a reporter talked to an engineer who was designing the bearings for a tiny gyroscope to go into a missile guidance system. The gyro had to be tiny to save weight. To be accurate even though tiny, it had to rotate at speeds so tremendous no bearing could survive for long. But the bearing had to survive long enough. "If my design were perfect," said the engineer, "this bearing would fly apart at the exact instant the motors exhausted the fuel."

Missile development becomes a matter of perpetually weighing the weakness of the links against the weight of the chain.

So now this report will look at a few of these links.

(Turn to page 78)



E. WRIGHTSON CHRISTOPHER, President, Rust Craft Greeting Card Co., says:

"BUE SHIELD rounds out our protection program with worthwhile doctor care benefits!"

"In setting up our employee health care program, we got what we think is the best in surgical-medical protection. We chose Blue Shield because of its liberal benefits and the wide range of doctor care it covers. Through the years Blue Shield has helped many of our people meet illness or injury without financial hardship."

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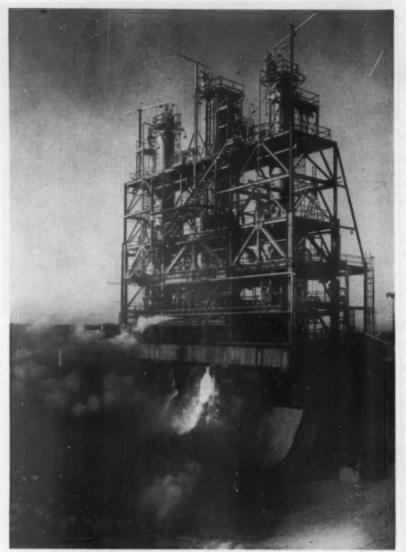
Cost is low. Benefits and dues are set locally to fit local needs and conditions. This, plus low administrative expense, provides realistic benefits at low cost. Saves your company time. Payments and details are handled directly by your Blue Shield Plan.

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For full facts, contact your local Blue Shield Plan, or write Blue Shield Commission, Dept. 618, 425 North Michigan, Chicago 11, Ill.



(1) Sansias marks and has Blue Shield Madical Case Plans



ENGINE TESTS like this one at Aerojet-General are samples of . . .

4. Problems in the Rocket Labs

IN PRINCIPLE, a rocket engine is about the simplest propulsion machine ever conceived. Any bright high school boy should be able to build one, and every so often one does. Hammer a sheet of aluminum into a tank with a flared opening at the back. Run a couple of thin tubes for fuel to a pair of light tanks. Fill one tank with gasoline or kerosene, the other with liquid oxygen or nitric acid. With a bicycle pump, put compressed air in the fuel tanks. Lash the whole thing to a stick with stabilizing fins, point it toward the sky. If you're lucky and try often enough, it may get up a mile or two. Quite a few of the men now heading missile programs spent time in the early thirties doing exactly that.

The only hard question for the lay-

man is the basic one—what makes the thing go. This picture should help: Stand on a skating rink with a brick in your hands; throw the brick away from you; you will slide backward over the ice. What your arm muscles have done is push you and the brick apart, one going one way and one the other. The brick goes faster because it's lighter, but you could speed yourself up by throwing another brick.

In a rocket engine, the fuel provides the brick and the muscle. The gas gencrated by the burning fuel and streaming out the back is a series of little bricks. The pressure generated in the firepot is the muscle pushing the gas and the rocket away from each other.

All that is simple enough for a high school boy, but developing it into re-



M I S S I L E S SPECIAL REPORT (Story starts on page 66)

liable engines has been no boy's job.
• Firepot—Consider just the problems involved in the development of such a simple-seeming device as the engine firepot. To start with, what shape should it be? You want to drive out the maximum tonnage of gas, and that calls for a wide jet tube; you also want the gas to move at maximum velocity, and that calls for a narrow one. Some size and shape will give you the best compromise. You want the incoming fuel to burn in a way that will distribute the fierce heat evenly without creating hot spots.

Basically, these are problems in the turbulent flow of gas at extreme supersonic velocities and in the detailed behavior of combustion. Until a few years ago, no one had any need for such scientific information, and it just doesn't exist. The designers have to use the slow and expensive method of cut and try. You build an engine; put it in a test stand (which didn't exist and had to be invented); see whether it holds together, and what thrust it develops. Then build another one a little bit different and see whether it behaves better or worse.

Finally, an engine looks good on the test stand. How will it behave in flight? The only way to tell is to put it in a rocket and fire it. But you get only one chance per engine, and mostly something goes wrong. How are you going to locate the trouble? You have to load the rocket with instruments and meters-and someone has to develop instruments light enough and sturdy enough to do the job. Five or six years ago, the best trick was to photograph the instrument readings, feed the film into a strong box and hope the box would survive the final crash. Meanwhile, other researchers were working on radio transmitters that could stand the gaff and could operate in the ionized layers of the upper atmosphere (which upsets most transistors, for instance); so now instrument readings can be radioed to the ground as the rocket flies.

All this time, scientists have been working in wind tunnels and combustion laboratories, trying to get a grip on the basic theories of gas behavior at extreme conditions. But this is still the weak spot, and even today a designer starting work on a new engine has to rely on judgment more than on mathematics.

• All That Heat-Back to the firepot. What are you going to make it out

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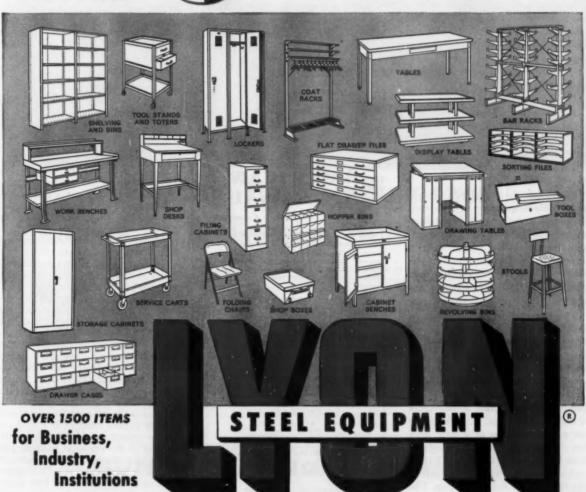
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"Just compensation" in condemnation of property

from the CLIENTS' SERVICE BULLETIN of The American Appraisal Company

Throughout the land, vast projects are under way involving the acquisition of private property for public use, under the right of eminent domain. For example, growing municipalities must acquire property for wider streets, schools, playgrounds, housing projects.

The right of government to acquire property for general welfare is unquestioned, but the Fifth Amendment to the Constitution provides this safeguard to the owner "...nor shall private property be taken for public use, without just compensation."

The interpretation of "just compensation" frequently is the subject of differences of opinion. The courts have held that "market value" of the property is the correct measure of just compensation.

Although the objective is frequently the acquisition of bare land, the courts have recognized that owners must be compensated for permanent improvements, which cannot be removed and so are a part of the realty. Courts have often held that permanently attached fixtures are likewise a part of the realty.

The simplest cases are those in which the entire property is taken. Where only a portion is involved, it becomes necessary to consider not merely the value of the property taken but also the loss to the property remaining. This loss to the remaining property may be negligible or substantial. Thus, a new highway cut across a corner of a farm may not affect the value of the remaining farm land—but 30 feet taken from a commercial building may destroy the value of the entire building. The measure of damage under "just com-

pensation" is the difference in the market value of property before and after the partial taking.

Confronted with a condemnation threat, the property owner needs the best possible assistance to present his case in a complete and convincing manner. Carefully documented evidence will usually afford a basis for a just settlement and avoid lengthy litigation.

An American Appraisal is a detailed inventory showing the true value of every item. It is supported by evidence that compels acceptance... and by records that will be available whenever proof is needed. It represents valuation principles that command respect. It is besed on The American Appraisal Company's over half-century leadership in the field of valuation for purposes of insurance, accounting, property control and corporate financing.

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M I S S I L E S SPECIAL REPORT (Stery sterts on page 66)

of? No metal in existence is able to retain its strength, and few can survive at all, at the infernal temperatures, which range up to 4,000F, of the gas inside.

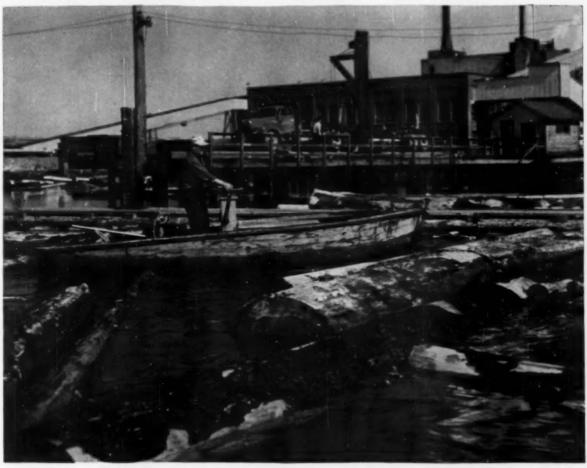
The first approach to this trouble, and the one still used in today's big rockets is to cool the metal somehow. One trick is to use a semi-porous powdered metal in the walls, so that fuel oozing through dissipates some of the heat-in much the way that Pueblo Indians cool water in their porous earthen jars. This is called transpiration cooling. A more efficient method is socalled regenerative cooling. Give the firebox a double wall and flow the often intensely cold incoming fuel between the walls before it is injected into the engine. This is effective and it preheats the fuel, thus avoiding any waste of the heat, but it involves a whole range of new problems. How thick should the walls be? How fast must the fuel flow? What if the fuel bubbles? Power plant engineers have been building heat exchangers for years, but never any that tried to transfer heat at the rates involved here.

Nowadays, in their forward thinking, rocket engine designers are trying to get away from the cooling problem; instead they would like to copy the ordinary furnace that protects its metal shell with a lining of firebrick. Bricks would be pretty heavy things to take aloft, but after all the engine only has to survive for 5 min. or so, and perhaps some material lighter and tougher than firebrick can be devised to do the

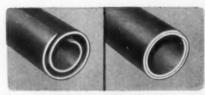
Researchers are experimenting now with ceramic and plastic linings and having some success. One experimental firepot is made of a spring-like coil of

steel embedded in plastic. Most promising of all right now is a group of strange hybrid materials that are neither metals nor plastics nor ceramics. They haven't even a name, and are called simply "the proprietary materials" because they are a private development of Haveg Industries, Inc. These are secret mixtures of organic and inorganic materials that have the property of combining chemically-the carbon compounds with the silicon compounds-getting stronger as they do so, when exposed to high temperatures. As long as the chemical reaction lasts, they are capable of absorbing enormous quantities of heat and of reflecting even more of it back toward the heat source. One of these materials is known to

Sorting out logs in the St. Regis Paper Company's Tacoma, Wash., mill pond, this armor-clad "floating bull-dozer" literally butts them into position. Built by the Eddon Boat Company, Gig Harbor, Wash., it uses a Graymarine Lugger 6-244 engine with 2-to-1 reduction, relies on Bundyweld Tubing for oil and fuel lifelines.



Why this "floating bulldozer" relies on lifelines of Bundy Tubing



Bundyweld is the only tubing double-walled from a single steel strip, copper-bonded through 360° of wall contact. Its unique structure makes it amazingly strong and highly versatile,

Bundyweld is uniformly smooth, inside and out; is remarkably resistant to vibration fatigue. Lightweight, it has unusually high bursting strength, can be fabricated easily, bends to shortest radii. PUSHING GIANT LOGS around for 16 hours a day is tough, demanding work. Every component part in the engine of this rugged little "floating bulldozer" must be able to take it. And that's why Gray Marine Motor Company, like so many leading manufacturers, specifies lifelines of Bundyweld® Steel Tubing.

Bundyweld lifelines for oil, fuel, brake, and hydraulic systems are made by an exclusive process (see left) that has made them the accepted standard in the automotive and refrigeration industries. Bundyweld, in fact, is used in 95% of today's cars, in an average of 20 applications each!

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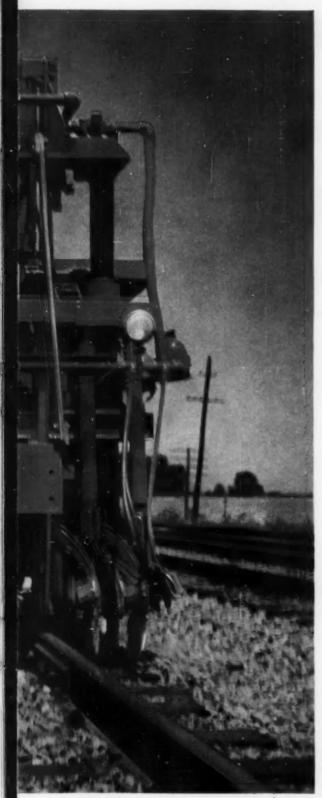
There's no real substitute for Bundyweld Tubing

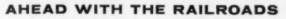
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SPECIAL REPORT (Story starts on page 66)

have withstood temperatures up to 12,000F for as much as 20 sec.

These proprietary materials, indeed, may be involved in the still secret solution of the nose-cone problem-the problem of designing a nose that can withstand the terrific frictional heat of reentering the atmosphere from space.

Off in the distance are two other possibilities. Enough improvement in solid fuels of the gunpowder type might make them available for long-range missiles as well as the little ones they are now used for. This would eliminate most of the motor problem. And still preliminary but active work is being done on "ion propulsion"—a system that would use electricity instead of heat to propel a stream of charged particles out of the rocket. This, of course, waits on some way of producing the electricity, perhaps by atomic energy.

I. Search for Fuel

In the development of rockets, improvement of the fuel is a more crucial matter than in any other type of vehicle.

In any vehicle, a good fuel is a nice thing to have. But in an automobile or an airplane, say, if you aren't satisfied with present performance you give it more engines or bigger engines. Today's fighter planes have carried this process to the point where they are almost all engine.

A long-range missile, though, is already nothing but an engine. The payload is only a fraction of a percent of the total weight. To improve the performance you must either make your engine more efficient or find a fuel that can do more work per pound.

You can get a quick answer straight out of the chemical tables. The one reaction that will give more effective energy per pound of fuel than any other is to combine hydrogen with monoatomic oxygen, oxygen in which each atom forms a molecule by itself. This is fine, except that to get practical quantities of hydrogen into tanks you have to liquefy it at a temperature of 428 deg. below zero Fahrenheit. And that no one has yet found a way to make mono-atomic oxygen in quantity or, once made, to prevent it from deteriorating into the more normal and stable form with two atoms per molecule. And that, anyway, the temperature of the reaction is so high it would burn out any firepot that can be made

The problem is to find fuels with as



Three - Legged Islands

LETOURNEAU

For a long time, oil men have been looking for a practical, movable man-made island in the sea.

They've got to get out there in the open water, then stand still —in calm seas or hurricanes long enough to drill deep under the ocean's floor for oil. If there isn't any oil, then it's pack up and move to another spot.

You don't find oil every time you drill, so any solution to the problem has got to include speed and mobility in changing locations.

The answer? Well, let's look at it this way. An island, that has withstood the beating of wind and waves for unknown milleniums, is an immovable object . . . while a ship that sails the seven seas is one of the most movable objects on the face of the globe.

In our solution to the problem, we've come up with a three-legged combination of the two. It's a big machine something like a barge, and weighs 4,000 tons.

You simply tow it out to where you want to drill for oil. Then electric motors run the legs down to the ocean's bottom and lift the entire machine up out of the water -on its own legs-high and dry.

And there it sits until the oil men are ready to move to another location. Then the barge runs down into the water again, the legs come up, and the rig's ready to be moved.

Not long ago, one of our "islands" pulled up stakes, moved a mile away and was back in operation in 8½ hours. An all-time speed record in offshore drilling.

If you ever have a chance, you'll enjoy a visit aboard one of these platforms. It has all the machinery for drilling an oil well, plus tanks for such things as fresh water, drilling water, fuel and drilling mud and storage for dry mud; even electric generating plants, cranes, a heliport, and airconditioned living quarters with dining room and galley for 45 men. It's almost like a city.

The Platform itself is triangular in shape. Each of its three legs is also triangular and is of open, lattice-work construction so the waves can go right through with very little resistance. All three legs can be raised or lowered together or one at a time at the rate of 1 foot per minute. This makes it easy to level up the rig if some of the bottom should wash out around one of the feet.

And while we're on the subject of legs, the present ones are 145 ft. long-for drilling in water up to 100 feet deep-but we see no reason why an offshore drilling machine could not be built with the legs several hundred feet long. That's supposed to be one of the big problems of the industry. We think we've got it licked.

But building islands-in-the-sea is only one of our activities. We're also working with other big problems-in off-road transportation, logging, land clearing, heavy lifting, and many other things that require really big answers. And if you have a big problem that needs a big answer, we'll be glad to hear from you.



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MISSILES
SPECIAL REPORT
(Story starts on page 66)

much energy per pound as possible and that are as easy and safe as possible to manufacture and to handle.

• Power Needed-Such a homely product as kerosene has long filled a part of the bill. It's easy to manufacture and handle; it's made up of hydrogen and carbon atoms. And when its hydrogen reacts with liquid oxygen, it provides a powerful thrust.

But kerosene is a profligate weightwaster; its carbon atoms do relatively little work. Liquid oxygen, too, is a weight-waster. No atoms have been knocked from or added to its molecular structure to give it added energy.

So, in the last five years, there has been steady search for replacements for both sides of a missile's fuel system—for the fuel itself and for the oxidizer.

The hunt for new oxidizers has turned up pure ozone, which is nothing more than oxygen with one extra oxygen atom added to its molecular structure. Because of its changed structure, it reacts more violently, produces more thrust, when it's mixed with a fuel. Industry has found ways to make ozone-though not yet in great quantity. Missile designers have found ways of feeding it from fuel tank to firepot. The toughest problem in using it remains that of handling it from the moment it's made in the chemical plant to the time it begins driving the missile skyward. Ozone, with its added oxygen atom, is an unstable element, eager to deteriorate into ordinary oxygen if it's not kept at precisely the right temperature and pressure.

Liquid fluorine is easier to deal with. It's a stable element, and as an oxidizer has much more pep than liquid oxygen. Industry has learned more of the techniques of its manufacture, has shepherded it through the pilot plant stage and is turning it out by the ton today. Big difficulty: Its combustion product is too toxic to use near the ground in

a first-stage engine.

These two chemicals—liquid fluorine and ozone—are sure to replace liquid oxygen in one side of all the long-range, high-flying missiles' fuel systems in the next couple of years. But they still will not solve some of the major problems of the missile designers. Since both have to be kept under pressure and at low temperature, even in a missile's fuel tanks, they add weight to the missile: The tanks that hold them must be built solidly to maintain pressure; to keep the fuel temperature low, powerful little

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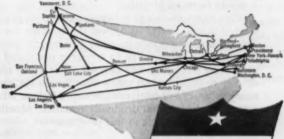
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MISSILES SPECIAL REPORT (Story starts on page 66)

refrigerators must be built around the fuel tank.

 Other Side—Yet, in terms of present scientific knowledge, both chemicals are about as good oxidizers as are known.
 What remains now is to find better chemicals for the hydrogen side of a missile's fuel system.

The most touted products of this search for something to replace homely kerosene are the so-called exotic fuels (BW-Jul.20,'57,p72). In the seething center of a missile's motor, each ounce of these tuels—made from such light metals as boron, lithium, beryllium—produces a more powerful, faster-propelling gas than any compound of hydrogen and carbon.

Secrecy blankets much of the story of these fuels' development, but from what little is known it's obvious that their development in the laboratories is now virtually complete, that the research effort now centers on how to build plants where they can be produced in large quantities.

But even these exotic liquid fuels still leave the missile needing two complete sets of pumps and pipes between the fuel tanks and the combustion chamber.

To get rid of the two-part fuel system and save tank weight, missile researchers are seeking a monopropellant: a combined rocket fuel that can react with itself like an explosive.

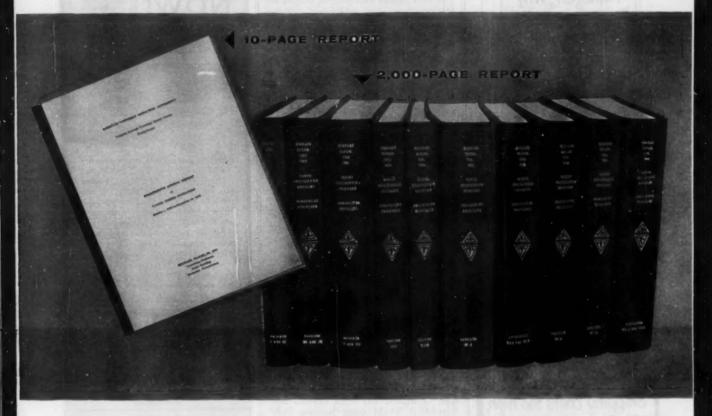
Like many explosives, most liquid monopropellants found so far tend to be highly unstable. At present, the search is leading toward various semiliquid gunks—gels, slurries, pastes, and suspensions that may prove less tricky to handle.

• Solid Fuels—Ever since the success of the German V-2, work on long-range rockets has concentrated on liquid fuels and on motors to use them. All the time, however, a quite different line of development has been coming out of the old Fourth of July skyrocket, which is propelled by burning gunpowder.

A solid propellant has great advantages. It is easy to store and service. It requires practically none of the elaborate machinery needed to burn liquids nor the refrigeration equipment necessary to keep them at the proper temperature until they're ready to be fired. In consequence, solid chunks of explosive have been the primary fuel for such comparatively small rockets as those airplanes fire at each other.

But gunpowder has serious disadvantages. It doesn't provide as much thrust

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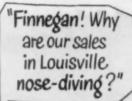
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M I S S I L E S SPECIAL REPORT (Story starts on page 66)

per pound as the liquids. Until recently, it hasn't been possible to make large quantities of it explode with a sufficiently steady pressure—and of course there is no easy way for a guidance device to control its thrust with throttles.

Lately, however, the missile makers have found ways to beat the first two disadvantages. They have increased the thrust per pound of solid fuel by developing a range of new fuels; for example, solid compounds of the same light metals that turn up in the exotic liquid fuels for missiles. These new solid fuels have much more thrust than the old black powder that has been around for centuries and such descendants as smokeless powder. They have also found a way to make them explode with steady pressure. The trick here is to produce the solid fuels in large grains instead of fine powder.

There remains the problem of reining in the power of these new solid fuels with a throttle controlled by guidance devices inside the missile itself. Once fired, the fuel of the skyrocket type of missile has been beyond any control; it would cease burning only when it was all gone.

Now, though, the Navy has found a still-secret way to damp down the rate of fuel consumption, shut it off altogether, or switch it on again from moment to moment. The device has been tested on the Spectre experimental rocket.

Spectre's performance has been precise enough to make missile researchers predict development of a solid-fuel rocket as large as the German V-2 by next year. And it offers hope for the Navy's lagging effort to develop a 1,500-mile solid fueled IRBM, the Polaris.

II. The Route up-and Down

There are perhaps only two features of missiles on which the 13 years' work since the first V-2 was fired has involved radically new developments instead of refinements and improvements. One is the problem of reentry into the earth's atmosphere—a problem the V-2 never had to face because it never went high enough. The other is a method of guiding the missile to its target.

Like an ordinary submarine torpedo, the V-2 contained a gyroscope to keep it steady in flight and headed in the right general direction. It had a timing device to turn it out of the vertical at



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the right moment. But beyond that, its designers simply patted it on the back and sent it off. If the wind shifted or the engine performance varied: that was just too bad. The shots spattered all over England.

· Near and Far-Today, the shortestrange rockets still don't steer themselves. They are aimed like guns at their

A variety of guidance systems have been developed for the anti-aircraft missiles with ranges of five to 75 miles. In some of these, the engine fires all the way to the target, and all of them are operating in atmosphere, so they can steer actively throughout their flight. Some are steered from the ground by radio commands. Sometimes a radio beam is projected from the ground to the moving target, and the missile steers itself so as to stay on the beam. The "homing" missiles detect the target themselves and chase it down. Commonest way of doing this is by radar: The missile sends out highfrequency radio pulses, picks up the radio wave that is reflected back by the target, and steers toward the reflected signal. Others detect the heat radiated from an airplane's engines and steer toward it.

· Self-Navigation-None these systems will work for the big IRBMs and ICBMs like Jupiter and Atlas. They go too far around the earth to rely safely on any radio connection with home base. They are able to steer themselves only during the early part of their flight while the engines are still running-and that's too far from their ultimate target to permit use of any

homing system.

So what the designers have done is make the big missiles navigate themselves like aircraft. If they keep track at all times of exactly where they are in space and how they are headed, they can steer themselves to stay on the flight path laid out for them in advance.

Keeping track of heading is not too difficult. A set of gyroscopes, with their property of spinning with their axis always in the same direction, gives the missile something to measure from. It has only to remember that as it swings around the curve of the earth, "down is no longer in the same direction it was at the place it started from.

But how can the missile tell where it is? A fairly easy system would be the LORAN that ships use, triangulating the signals from two widely separated radio stations. But an enemy could too easily confuse the missile with false signals. And the same applies to reliance on any manmade signal. A lot of thought has been given to such systems as having the missile observe changes in the magnetic and gravitational fields of the earth. But present design has settled pretty firmly, within the past



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year, on just two systems of navigation -stellar and inertial.

Stellar navigation corresponds closely to what a human navigator would use. The missile steers by the stars. Three sets of cross hairs are sighted on three different stars. Electric eyes and servo motors keep them centered on their stars no matter how the missile moves. As the missile changes location, the angles among the star sights change.

This is far the most accurate system known-but until it gets above the atmosphere it will work only at night and in clear weather. So inertial guidance is needed as an alternate. This is a system for navigating in a box with no contact with the outside world. Closed in its box, the machine can't observe where it is or how fast it's going. But it can feel the jerk when-ever the speed changes. Measuring the strength and duration of the jerk with delicate acceleration meters and knowing that it started from rest, the computer can figure out what speed it must have accumulated at any moment. And from the speed and the passage of time it can figure out where it must be.

This is an almost unbelievable system. It's inherent in it that any errors accumulate as the seconds pass unless position can be checked against a stellar system. To work at all, the equipment must be practically perfect, almost absolutely error free. And it has to be able to do this tucked in between a nose cone white hot from air friction and a tank of liquefied gas several hundred degrees below zero. Until recent months, hardly anyone believed the manufacturing could be done.

By a fortunate coincidence, both these key problems—long-range guidance and atmosphere reentry—have come to a solution together. So that now there are almost daily reports of IRBM and ICBM tests. It would all be grounds for optimism except for one disturbing and frightening thing—the Russians seem to have solved both problems months earlier.

REPRINTS AVAILABLE

Single copies of this article—plus the tabulation of U. S. missiles published in BW last week—will be available in about four weeks to Business WEEK subscribers upon request without charge. Other copies will be billed at the following rate: 1 to 10 copies, 50¢ each; 11-100 copies, 40¢; 101-1,000 copies, 30¢; over 1,000, prices on request. Address orders for reprints to Reprint Dept., Business Week, 330 West 42nd Street, New. York 36, N. Y.

X-17 "MAN-MADE METEOR"

... so TIME magazine calls the Lockheed X-17 three-stage re-entry test missile.

Developed by Lockheed for the Air Force Ballistic Missile program, the X-17 recently surpassed all known speed records for instrumented test missiles.

On re-entering the earth's atmosphere, air friction heats the missile causing portions to burn—appearing like a shooting star to ground observers.

Powering the huge X-17 are five solid propellant rocket engines developed and produced by Thiokol Chemical Corporation at the Redstone Division, Huntsville, Ala.

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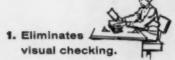
ow, IBM brings you a system that automatically provides punched cards directly from the time recorder. This tremendous advance eliminates four manual operations, lifting your basic routines into a new era of cost-cutting efficiency and ease. For with the new 8200 Time Punch, your data processing begins right at your door.

The 8200 Time Punch is available in two types. First, for attendance time in punched-card form. Second, for job time and related data, also in punched-card form.

The punched cards produced by the new 8200 can be used directly in IBM data processing systems—thus giving you prompt reports on payroll, job cost analysis, production and other valuable records. Both types of the new IBM 8200 operate on regular AC power, or as units of an IBM master time system.

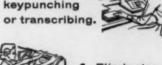
NEW IBM 8200 TIME PUNCH

The first time recorder that automatically "keypunches" time cards...eliminates these 4 costly steps in payroll and job cost procedures...





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- 3. Eliminates
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 or transcribing





4. Eliminates verification.



AIRBORNE SURVEYORS, with cameras slung in plane, and magnetometer trailing after, make maps, seek ore and oil for industry.

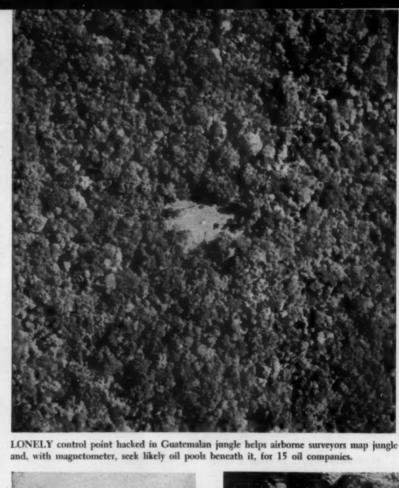
Aerial Mapmakers Speed an

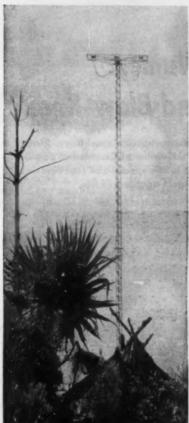
With cameras, computers, and electronic instruments they're mapping the world faster and more accurately, and finding for industry the wealth buried beneath its surface.

Thirty-odd years ago, airplane pilots blended their trade with the surveyors' art and produced a revolution in one of man's oldest attempts to apply science to the world around him. Photographing the ground below their airplanes, they reduced sharply the time it took to survey and map the land, made it possible to map wild areas that not even the toughest ground survey parties

were able to reach on their own feet.

Ten years ago, the airborne surveyors, armed with a new set of wartime-developed instruments, blended the field geologists' business into their trade. Working with airborne magnetometers, scintillation counters, and other electronic instruments that record the structure of the earth below, they can cover in a day a thousand





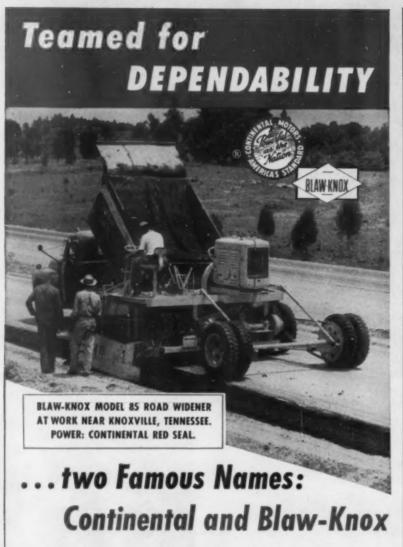
MARKER fixed on jungle floor by groundbased men in air surveyors' team will guide oilmen later to concession boundaries.

Ancient Art

times the area a field geologist can survey. They have discovered iron, uranium, and other metals-even oilin deposits that went undetected for years by ground surveyors.

Today, the airborne surveyors are moving in on the engineering profession. This time, they're plotting the cheapest and best routes for highways, railroads, pipelines. The instruments

SHORAN station on jungle mountaintop keeps track of airborne surveyors' flights, pinpoints location of each likely drilling site found by magnetometer.



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that lead them into this new field are electronic digital computers.

• Racing Time—Word was spread from Boston last month of some of the newer developments in this fresh field of aerial surveying. Some 300 of the nation's highway planners met there to decide how best to use the engineering talent available to draw the plans for \$100-billion worth of new roads in the next 15 years.

They got some of the prime answers to their problem from photogrammetric researchers at Massachusetts Institute of Technology. Basically, the MIT researchers' report was that the tedious, time-consuming, engineer-wasting job of calculating from maps the best route for a new highway can be handled rapidly by a digital computer. The computer can be linked almost directly with the machines used for making maps from aerial photographs, will produce the answers to highway touting problems in a fraction of the time this job now takes.

• Six-Month Job—These days, it takes an airborne surveyor about six months to take the aerial pictures and make the finely detailed maps an engineer needs to plot the route of a new highway. Getting the pictures may take three or four days. Plainly, making the maps (which are scaled at 1 in. to 20 ft., and record every 1-ft. change in the contour of the land) is the long phase of the ich

Soon, say the photogrammetric researchers, it should take much less than six months to handle this same task with the aid of electronic computers.

New developments like these are still being tested in laboratories. But under the pressure of the highway program's demands, their development will be rapid, and their commercial use should follow quickly.

I. An International Industry

As these developments hatch out of their laboratory stages, they spur the growth of the airborne surveyors' business, cutting the cost of their work and enlarging their markets. Through most of the last five years, the major U. S. airborne survey companies' business has been bounding up by about 15% a year, and in the last three years an estimated 20 new outfits have moved into the industry.

Demand for the industry's products—chiefly topographic maps, mineral and oil surveys, and sets of aerial photographs that are used to survey anything from vegetation and soil types to the processes of urban development—comes from industry, federal and state agencies, and the military. Of the \$100-billion price put on interstate and local highway programs over the next 12 to 15 years, it's estimated that more than



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\$200-million will go to pay for the work of the airborne surveyors.

• Small Business' Realm—Yet, for all the new demand, their industry is still strictly a small business field. Three companies share the bulk of the business in the U.S. and none grosses more than \$10-million a year for the work. Closest to this mark is Aero Service Corp., a 35-year-old Philadelphia company that started in the post-World War I barnstorming business. Next is Fairchild Aerial Surveys, Inc., with a \$6-million a year gross; and third, Hycon Aerial Surveys, Inc., of Pasadena.

Another 45 companies are in one or another phase of the photogrammetric and aerial surveying business. Most of these are new, and together do no more than \$10-million worth of photogrammetric business a year.

• Global Field—The three major companies range over the whole world, get about half their yearly volume from foreign work. They seek oil (with the aid of airborne magnetometers) from Guatemala to New Guinea, hunt uranium (with airborne scintillation counters) from Latin America to the far Canadian north, make maps for engineering projects from Australia to Afghanistan.

The U.S. companies meet hot competition when they bid for these foreign jobs. Much of this comes from European companies, French, Dutch, and British. Toughest competition is Britain's Hunting Associates, Ltd. This shipping and air service combine has air survey divisions in several parts of the world; together, they form the world's largest international air survey group. Hunting's Canadian subsidiary, Photographic Survey Corp., is the largest part of the group, and its business, too, ranges far outside Canada.

Fairchild and Aero Service each have their own foreign subsidiaries, some wholly, some partly owned. Three years ago, the two parents set up a joint company to handle large foreign jobs that would be too big for either of them individually. This is a 50-50 subsidiary called Worldwide Surveys, Inc.

II. Customers and Costs

One of Worldwide's steadiest tasks has been to photograph more than a dozen foreign countries for the U.S. Defense Dept. From the pictures, the U.S. prepares detailed maps for use in an emergency. This defense work has taken Worldwide crews to the Middle East and Far East in the last few years, and the contracts have been worth more than \$3-million.

Domestically, the airborne surveyors' clients range all the way from major oil companies to tobacco growers' leagues, from the larger federal agencies to county tax assessors.

Their needs vary widely, but the first step on every job is to collect a set of aerial pictures. These are taken (by cameras costing up to \$15,000) in overlapping pairs, each one including about 60% of the area covered in the next. This overlap permits the surveyors to peer at the pairs of photographs through a stereoscope, to see in the image the ridges and valleys just as they appear on the ground.

• What Customers Need-Construction engineers will almost always want detailed topographic maps made from these pictures. There are offbeat uses for the maps, too. Philadelphia Electric Co. regularly has Aero Service surveyors photograph its main coal pile. From the map that's made it gets a rapid inventory of the coal.

A lumber company in the Northwest, surveying its stands of timber, wants the aerial photographs correctly aligned and fitted together to form a photomosaic. From these its forestry specialists can tell the height and density of the trees, pick out diseased timber, select the easiest hauling route.

With the rapid growth of suburbs, local governments continually keep remapping their realms. Often, the county tax assessor finds structures that don't appear on the tax rolls.

· Package Deals-Most mining and oil companies want a package deal: photographs, maps, and the record of a geophysical survey made with mag-netonicters or scintillation counters. Hycon Aerial Surveys specializes in taking its aerial photographs in color for mining companies. Clues to ore deposits can often be found in variations in the color of the earth's surface-variations that can be seen only from the air. One major mining exploration job now in progress covers 405,000 sq. mi. of rich ore areas in central Canada and the north-central states of the U.S. Canada's Photographic Survey Corp. is using color photography as well as geophysical instruments on this contract. A group of U.S. and Canadian mining companies will pay the \$2-million

• Costs—Since contracts vary widely, costs do, too. Highway departments have found that a survey costing \$4,000 when made from the ground can be made from the air for less than \$1,000 a mile. But some air surveys for highways cost less than \$300 a mile.

The airborne surveyors cite a general rule that assignments for industry rarely cost more than 1% of the total cost of the industrial development that follows.

III. Hunting for Billions

For an international industry, the airborne surveyors' earnings look small. But earnings figures alone do not ac-



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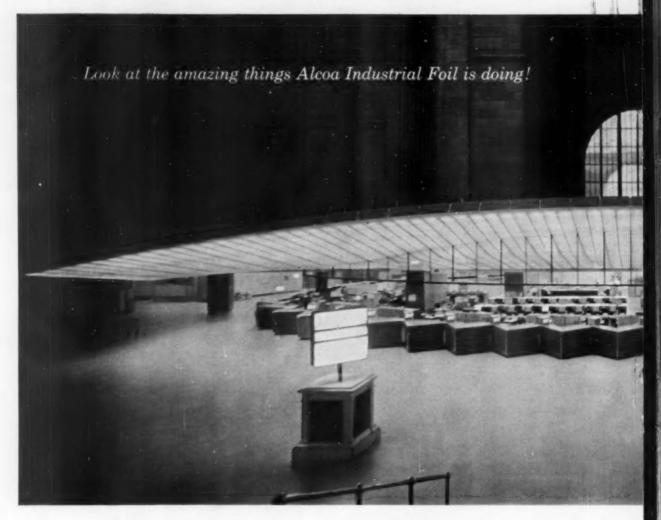
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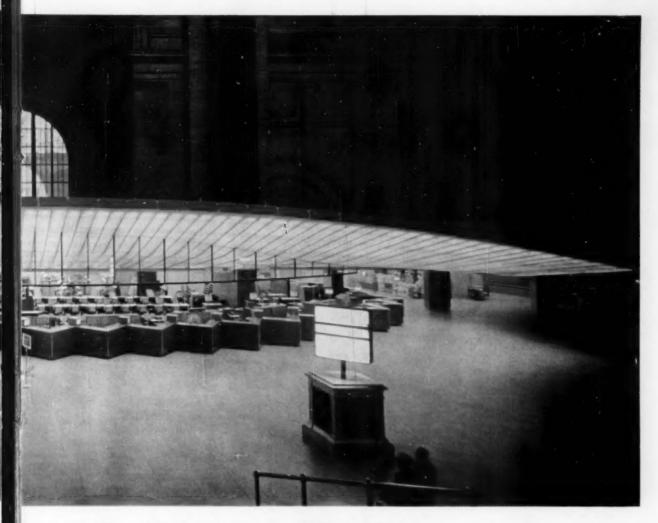
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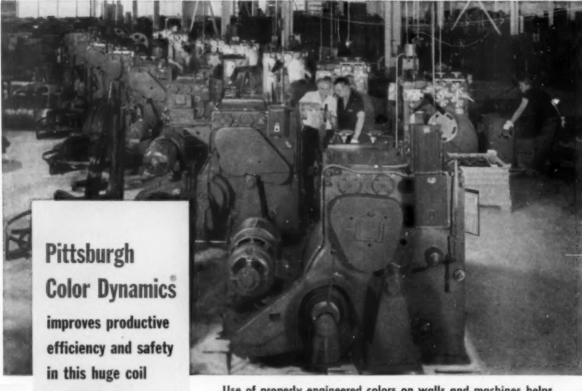
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Tapered both ways from the center, the Penn Station canopy seems almost weightless. The honeycomb is framed in aluminum and supported by a system of aluminum T-rails . . . which means little maintenance, no deterioration, new appearance indefinitely.



Use of properly engineered colors on walls and machines helps workers see their jobs better and reduces danger of time-loss accidents in Wickwire Spencer's Palmer, Massachusetts Plant.

mproved seeing conditions that increase productive efficiency . . . More pleasant work areas that improve the morale of workers . . . Safety colors that reduce danger of accidents. These are benefits resulting from the use of Pittsburgh color DYNAMICS in the Wickwire Spencer coil spring mill at Palmer, Mass.

spring plant

● This division of the Colorado Fuel & Iron Corporation is one of the nation's largest producers of coil springs. It produces extension, compression and torsion springs of many types for motor vehicles, farm implements, heavy industrial machinery as well as for home use.

• "We selected colors for our Palmer spring mill according to Pittsburgh's painting system of COLOR DYNAMICS," states Fred Lindstrom, C. F. & I. New England District Manager, "It improve working conditions. Colors were used on walls and ceilings that raise the light level in work areas. Stationary and moving parts of machines were painted with colors that permit operators to see their jobs with minimum eye strain. Safety colors on machinery and traffic lanes have lessened accident hazards.

• "All of these improvements have increased productive efficiency and morale. We believe they have also

given our operators greater pride in their surroundings. This pride makes them keep their machines bright and their departments clean, simplifying housekeeping problems. And with COLOR DYNAMICS we get these benefits at no greater cost than conventional maintenance painting."

• This Wickwire Spencer spring mill is only one of many thousands of plants in which efficiency and morale has been improved by COLOR DYNAMICS. Why not try it in your plant—on a machine or two or in a department—and see the difference it makes?

How You Can Get A Color Plan For Your Plant-FREE!

• We'll be glad to mail you a fully-illustrated book on how to use COLOR DYNAMICS in industry. It explains simply and clearly what this painting system is and how to use it most advantageously to improve productive efficiency and safety. Better still, we'll be glad to make a color plan of your plant without cost or obligation. Call your nearest Pittsburgh Plate Glass Company branch and arrange to have our representative see you. Or mail coupon at right.

Send for a Copy of this FREE Book

Pittsburgh Plate Glass Co., Paint Blv.,
Bepartment BW-107, Pittsburgh 22, Pa.

Please send me a FREE copy of
your booklet" COLOR DYNAMICS."

Please have your representative
call for a COLOR DYNAMICS survey
without obligation on our part.





PITTSBURGH PAINTS

PAINTS . GLASS . CHEMICALS . BRUSHES . PLASTICS . FIBER GLASS

ITTSBURGH PLATE GLASS COMPANY

"... clues to ore deposits can often be found ... only from the air ..."

AIR SURVEYORS starts on p. 96

curately reflect the industry's importance.

Two aerial surveys illustrate this.

In 1946, U. S. Steel Corp. hired Fairchild to survey 15,000 sq. mi. of wild Venezuelan jungle, south of the Orinoco River. It took Fairchild two years to get the pictures and put them together in a photo-mosaic. The contract brought Fairchild about \$250,000. But for U. S. Steel it brought discovery of Cerro Bolivar, the Venezuelan mountain range whose iron ore deposits are conservatively estimated to be worth \$4-billion.

Recently, Quebec Cartier Mining Co., U. S. Steel's Canadian subsidiary, has been using aerial photography and photogrammetry to map out roads and sites for its iron ore development project

in Quebec (page 175).

Basis for Development—Postwar industrial history is filled with cases that, though not all so spectacular, are roughly similar. Wherever new mines or new oilfields have been opened since World War II, the airborne surveyors had a major hand in their discovery and exploration.

The hunt for potential oilfields never ceases. Lately, Worldwide Surveys has photo-mapped 150,000 sq. mi. of the Libyan desert for five U.S. oil companies. Currently, Aero Service is completing maps of a large part of Guatemala for a combine of 15 oil com-

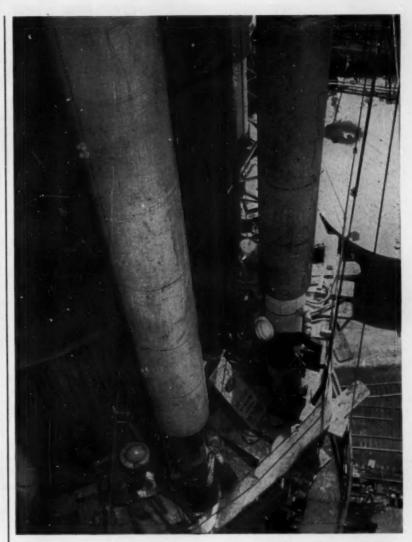
panies

• Electronic Aids—Today, between a third and a half of the larger aerial survey outfits' income comes from this exploration work for mining and oil companies. The work is almost entirely the product of these three geophysical surveying instruments:

The airborne magnetometer records variations in the magnetism of the earth's crust. The instrument trails in a bomb-shaped container 100 ft. or so behind the survey airplane, and where it records sudden peaks, it points to probable underground bodies of ore. Where it shows a dip in magnetism, it indicates the basement rocks of the earth's crust lie deep. From this, oil geologists can assume there may be oil pools between the surface and the basement rocks.

The electromagnetic detector aims at much the same results in searching for non-magnetic metals. The instrument records magnetic countercurrents set up in the ground below.

The airborne scintillation counter re-



Enlisting an ancient ally against heat loss

Heat is an unruly servant. It begins fleeing right after its creation. But man has enlisted allies to keep heat working longer and better and more economically. Among these temperature-tamers are K&M asbestos insulating materials.

Of course, K&M asbestos insulating materials are incombustible, light-weight and economical. As you know, they won't rot or corrode. But—need insulation that's vibration-proof? Impervious to water or steam leakage? Can be cut, sawed

and scored with ordinary tools? Can handle temperatures of up to 1900°F? There's a K&M asbestos insulating material for every one of these needs. In addition, it comes in cements... in pipe insulation material... in sheets and blocks.

Write today for complete details on K&M asbestos insulating materials and other quality asbestos products made by Keasbey & Mattison.

KEASBEY & MATTISON

COMPANY . AMBLER . PENNSYLVANIA





Season's Greetings (that last all year long)

For a different Christmas gift to business friends why not send handsome plants. They add a colorful, masculine touch to any office, and serve as permanent reminders of your thoughtfulness.



You may send plants anywhere thru the world-wide facilities of FTD. It's easy and inexpensive. Just have your secretary call or visit the florist who displays the famous Mercury emblem. He'll take care of your entire Christmas list-painlessly. Delivery is guaranteed.



This emblem guarantees absolute satisfaction or your money cheerfully refunded.

SEND FLOWERS-BY-WIRE

SEND FLOWERS-BY-WIRE
THRU 11,000 MEMBERS OF Florists' Telegraph Delivery

cords irregularities in the surface radiation of the earth. Where it hits a sudden peak, there's likely to be a body of radioactive ore below the ground.

IV. Putting It All on Paper

A fourth electronic instrument fits neatly into the industry's work. It's shoran (short-range aid to navigation). a system that keeps a running record of the photo airplane's position. A short electrical pulse is transmitted from the airplane to two ground-based shoran stations, which retransmit the signal back to the plane. The time the signal takes to travel to each station and back to the plane again is recorded. Thus the plane's path can be constantly plotted.

Keeping track of where their planes have flown is, of course, the airborne surveyors' basic problem. You cannot make a map from those pictures-or even try to judge relative distances of points shown in the pictures-unless you know the location in space of the land you have photographed.

· Room on the Ground-For this reason, aerial surveying has still not supplanted entirely the work of the ground surveyor who must trudge the countryside with his steel tapes and his leveling instruments. How much of this ground work the airborne surveyors must still do depends on the limits of error permitted in the maps they make. If they're mapping 100,000 sq. mi. of relatively undeveloped country (outlining an oil concession, for example) at a scale of one inch to half a mile, the allowable error will be around 30 ft. If they're mapping in detail a 100-mi. stretch of the route for a highway, at a scale of 1 in. to 20 ft., the allowable error will be closer to 6 in.

On the first job, the surveyors would need to establish the precise position and altitude of 40 or 50 ground control points. But on the second job the margin for error is so strictly limited that about 300 ground control points would have to be established.

· Plotting the Maps-Spanning the gaps between these points is the work of the stereoplotter. This complex optical instrument permits its operator simultaneously to: (1) scan the aerial photographs, (2) correct for errors caused by the photo plane's drifting from its course or making sudden changes of altitude, (3) judge the height of any point of the terrain shown in the photographs, and (4)

draw a topographic map.

To the stereoplotter operator, the ground surveyor identifies the ground control points he has established. The stereoplotter can "bridge" the gaps between those points, skipping from one pair of aerial photographs to the next. In a 100,000-sq.-mi. small-scale sur-



Elevator doors open quickly to unload passengers



Doors stay open until last passenger leaves



No door threats here-doors remain motionless until car is loaded



Beautiful Harrison Park Apartments

in East Orange, New Jersey, feature Westinghouse Operatorless Elevators with tenantpleasing Traffic Sentinel doors. Photos above were taken on location.

Architect: Romolo Bottelli, Jr., A.I.A.

Harrison Park, Inc.—A. H. Padula, Pres.

Harrison Park Construction Co., Inc.

—W. T. Gotelli, Pres.

Frank H. Taylor & Son, Inc.

-Managing Agents

WESTINGHOUSE ELEVATORS WITH TRAFFIC SENTINEL® DOORS

Operatorless elevators equipped with Traffic Sentinel doors are a boon to buildings that require fast and courteous traffic handling. This means any sizable building, new or existing, commercial or residential.

Traffic Sentinel, a Westinghouse original development, is an electronic device which minimizes the length of time doors remain open at floors to achieve automatically the most efficient loading and unloading of cars. The lighter the traffic, the shorter the door-open time. When traffic is heavier, door-open intervals adjust auto-

matically to the specific load demand. Results?—elimination of "poor elevator service" complaints—and a superior performing elevator system to which tenants and building management alike can point with pride. Ask the Westinghouse Elevator Division representative nearest you to show you operatoriess elevators with Traffic Sentinel in operation.

Westinghouse



... the simplest copy method of all

In and out in 4 seconds. That's All-Electric copying speed and simplicity. And it's yours only in "Thermo-Fax" Copying Machines. This exclusive dry copying process eliminates all chemicals and negatives. You make quick copies by electricity alone for as little as 5¢ per copy. You get more facts faster, make faster decisions. Try it on letters, records, invoices, reports or other business information in your own office. See how much time and money All-Electric copying simplicity can save for you. Send coupon for details now.



vey, the gaps between control points may be 50 or more miles. Yet, working with the more sensitive stereoplotters (most of them made in Switzerland and Germany, and costing around \$50,000) the operator's error in estimating heights and distances from the photographs is rarely more than 25 ft. But when the mapmaker's margin of error is reduced to as little as 6 in., ground control points must give him almost a running check on his accuracy.

 Surveyors' Nemesis?—Research in Canada has lately been pointing one possible way to supplant ground surveyors entirely on at least some aerial surveys. Canada's National Research Council has come up with a system that uses: (1) airborne radar plus delicate airplane altimeters, to record the height of the ground below: (2) two aerial cameras, one to survey the ground, the other to record the airplane's drift; and (3) a complex formula that permits digital computers to digest information fed to them from the photographs and the radar records, then toss out sets of figures showing locations and elevations of points shown in the photographs.

V. Filling the Blanks

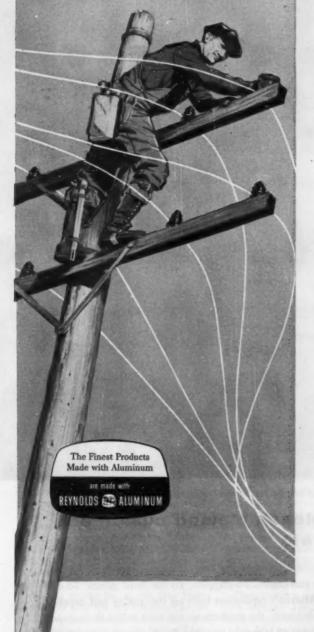
This basic research illustrates what's happening on the fringes of the aerial surveying industry. The search is always for speed, and thus economy.

No matter how fast they may move within the next couple of decades, the airborne surveys aren't likely to work themselves out of a job. Men have been at the task of mapping the world since long before Ptolemy drew his map 2,000 years ago. In two millenniums, they have progressed quite far, but nowhere near so far as you might think from a glance at an atlas.

• Chores for the Future—Though most of the U.S. is covered by aerial photographs, the best complete map covers the country at a scale of 1 in. to 5 mi. and marks only 100-ft. changes in its topography. About 80% of Western Europe is mapped in greater detail than that. And most of the rest of the world is a photogrammetrist's nightmare of incompleteness and inaccuracy.

The blanks are no longer filled with sketches of medieval monsters or swollen-cheeked angels puffing breezes across empty spaces. The incomplete stretches are not so poorly mapped nor the inaccuracies so great that a navigator is likely to lose his way sailing a ship or flying an airplane around the world. But if an engineer wants to plan a highway or a railroad, lay out a large industrial plant, design a dam, locate the limits of a mine or an oilfield, he must almost always send somebody out to survey the land and make an entirely new map for him. **IND**

more of the right properties



New from Reynolds ...
All-Aluminum Conductor
...low-cost
strong, lightweight

Reynolds has just developed a new high-strength, all-aluminum electrical conductor—one that has more of the properties that utility men want for many applications than any yet produced.

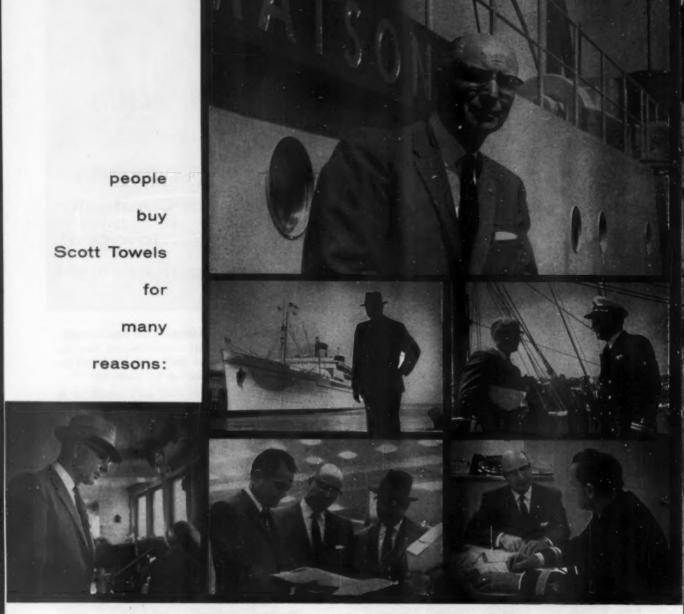
First, Reynolds new 5005 alloy conductor is much stronger than ordinary all-aluminum cable. In fact, it is stronger than electrically equivalent sizes of copper. In addition, it is as light and easy to string, and as corrosion-resistant as conventional aluminum cable. And it costs no more than steel-reinforced aluminum cable, less than copper.

Of course, the new 5005 conductor has dramatic importance to the electrical industry, but it also has meaning for any manufacturer who works with metal. It demonstrates the versatility and adaptability of this strong, light and rustfree metal. And it demonstrates the progress that Reynolds is continually making to help improve products and production for industry.

For details on the new conductor, or on any application of aluminum, call the Reynolds branch office near you, or write: Reynolds Metals Company, P.O. Box 1800-GA, Louisville 1, Kentucky.

Watch Reynolds All-Family Television Program "DISNEYLAND", ABC-TV.

REYNOLDS
ALUMINUM
helps cut costs,
improve products



Mr. Clyde Lapier, General Purchasing Agent of Matson Navigation Company, says:

"Scott Towels please Matson customers all along the line!"

Mr. Lapier, shown aboard Matson's new luxury liner Matsonia, reports: "We deal almost entirely in services. To passengers. To shippers. To our hotel guests. To our office building tenants. With Matson's reputation built on the quality and dependability of Matson service... obviously, the products we use must reflect these standards. Scott fulfills our requirements all along the line. The fine Scott name contributes to that other side of service, too—visual acceptance."



Washroom problems? Find your Scott distributor in the Yellow Pages, under "Paper Towels." And watch Scott's TV programs, "Father Knows Best" and "The Gisele MacKenzie Show" on NBC-TV.

When Insurance and Politics Mix

- In Massachusetts' compulsory auto coverage, the tie seems unbreakable-and it's giving a strong added twist to the profit squeeze that besets auto insurance everywhere.
 - Companies face annual fight to make ends meet.
- This year the battle is hotter than ever, and 30 states studying compulsory setups have their eyes on outcome.

The annual autumnal ruckus over compulsory automobile liability insurance rates in Massachusetts is once again coming to a head. In that state, the rate question is complicated by politics and a legal tie-in with the pre-Election Day period. But the economic issue is the same one that faces the auto insurance business everywhere-a rise in accident claims far greater than the increase in business and in premium in-

Last week, Massachusetts State Insurance Commissioner Joseph A. Humphreys announced the tentative rates for 1958. They figure out to a 9.1% increase over 1957 for private passenger cars-a total additional bill of about \$6-million more for the state's car owners.

The insurance companies, however, had declared that they needed a 25.5% hike in premium income on top of the 19.6% increase they won after a con-

siderable struggle a year ago.

• Heat—The auto liability insurance situation in Massachusetts generates more heat than elsewhere because the state is one of three that have compulsory insurance laws. (The New York State compulsory auto insurance law became effective last Feb. 1. North Carolina's law comes into effect on Jan.

Since every car owner residing in the state must be covered, he has a vital stake in the cost. And since there are so many car owners-most of whom are also voters-a formidable political roadblock is created. In Massachusetts at least, the knot that ties together insurance and politics is apparently unbreakable.

Adding to the fire in the Bay State is the fact that the law requires the insurance commissioner to set rates for the following year shortly before Elec-tion Day. Since he is politically appointed, insurance people say he's wide open to pressure from his own party to keep rates down.

· Squeeze-Though the need for higher rates and the outcry against them probably make more headlines in Massachusetts than elsewhere, the problem is general. The expense of doing business is rising throughout the fire and casualty insurance industry, as in practically every other industry. And the number of accidents is skyrocketing (BW-Mar.16'57,p139).

As one example, W. F. Powers, manager of Allstate Insurance Co.'s Long Island regional office, says monthly claims for his company in New York State have increased 38.5% this year to date, while the company's business is up only 12%.

Broaden the perspective to include a representative group of 128 stock fire and casualty companies, writing more than half of the business underwritten in the stock company field, and the picture is the same. In the first half of this year, according to a compilation by Alfred M. Best Co., a publishing service for the industry, losses and expenses exceeded premiums by 2.6%. In the first six months of 1956, the same group's premium income had exceeded insurance losses and expenses by 1.4%. This year, insurance men predict, may be the worst year since 1932 for the stock fire and casualty trade.

· Hard Hit-Auto liability insurance has been one of the hardest hit classes. For stock fire and casualty companies generally, auto lines account for about 39% of total premiums. The mutual companies in the fire and casualty field, whose assets last year came to \$4.7billion in comparison with the stock companies' \$17.8-billion, got 44.9% of their total premium income from auto lines. Losses in auto insurance, therefore, eat deeply into profits of both types of companies.

Their concern over rising losses from auto liability insurance is evident in

these comments:

· At a recent Midwestern regional meeting of insurance commissioners, worried insurance executive summed up the feeling of company officials preparing to plead their case: "The present loss situation is critical. Barring a rate increase, insolvencies and failures will start occurring."

· At another regional meeting, this time in the Far West, Commissioner William A. Sullivan of Washington State declared: "Unless the present trend of underwriting losses is slackened, there is serious danger ahead for both policyholders and insurance companies. . . .

· Eves on Massachusetts-With expenses of writing insurance rising, and the accident rate soaring, premiums have to go up to cover increasing costs. To insurance companies it's a very simple mathematical problem. But in Massachusetts, the political complications obscure the mathematics. One result is that many companies are loath to do business in the state; only 111 casualty companies write auto liability insurance in Massachusetts, compared with 232 in Connecticut, 253 in New York, 242 in Rhode Island, and 198 in Maine.

Despite politics, however, Massachusetts' experience with compulsory auto liability insurance is watched closely by state legislatures and by insurance companies doing business in other states. There's a good reason: Some 30 states last year set up special committees to look into the pros and cons of compulsory auto insurance. Since Massachusetts has had a compulsory law for almost 30 years, its experience is bound to weigh heavily.

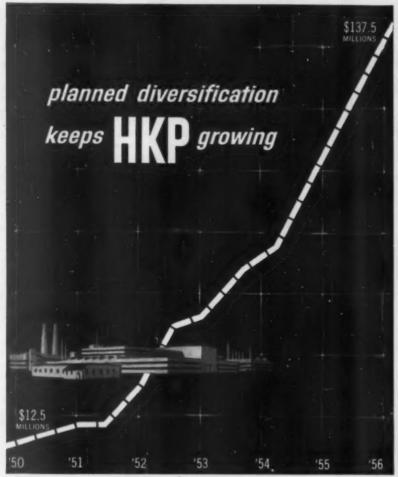
Even Massachusetts itself is taking stock of its insurance history. Demo-cratic Gov. Foster Furcolo has appointed a legislative commission to look into possible revisions in the compulsory insurance system, including meth-

ods of determining rates.

· Law-The law in Massachusetts requires every owner of a car registered in the state to carry insurance against damages up to \$5,000 for death or injury to one person and \$10,000 for more than one person in one accident. The insurance covers accidents within the commonwealth only. As in every other state, rates differ from community to community, depending on the past safety record of each. They also differ depending on whether the car is driven for business, by persons under 25, or only for pleasure.

For a businessman living in Boston last year, for example, the minimum compulsory insurance cost was \$109.50, if his car was not driven by anyone under 25 and was used for business. If the 1958 rates are made final, his minimum insurance will jump to

· Loss-In 1956, the casualty companies licensed to write auto liability insurance in Massachusetts claim they



Acquisition of The Cleveland Hardware & Forging Company brings to eleven the number of versatile Porter divisions. They manufacture products in 40 plants in the United States and Canada, four of which have been acquired so far this year.

Serving industry's needs is a prime responsibility at H. K. Porter Company, Inc. Porter maintains intensive development programs which are translated into new manufacturing developments almost every month.

This awareness of the needs of the market place has resulted in a program of planned diversification...and a 1150% increase in Porter business volume since 1950. This volume comes from divisions manufacturing steel and fabricated steel products, copper-alloy metal products, electrical equipment, refractories and industrial rubber, wire and cable.

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CLEVELAND . CONNORS STEEL . DELTA-STAR ELECTRIC . MENRY DISSTON . RIVERSIDE-ALLOY METAL LESCHEN WIRE ROPE . QUAKER RUBBER . REFRACTORIES . VULGAN CRUCIBLE STEEL . W-S FITTINGS M. K. PORTER COMPANY (CANADA) LTD.

lost \$6.43 for every private passenger car in the commonwealth carrying minimum compulsory coverage, whether it was involved in an accident or not. The amount provided by the rate structure to pay claims, the companies say, fell \$8.2-million short of meeting the cost of claims incurred. The insurance commissioner allotted 67.5% out of each premium dollar for coverage of these costs; the remaining 32.5% for acquiring and handling the business.

According to the companies, this allowance for expenses is the lowest in the nation—and makes no provision for profit. But their major complaint is not with the 32.5% figure. Several company officials agree that the sum it provides comes pretty close to the actual cost of maintaining the compulsory business. Their objection is to the 67.5% for claims—in 1956, claims actually took 83% of every premium dollar.

• Denial—This year accidents and claims headed still higher, and the companies insisted on further increases this fall. They also asked for higher surcharges in several cases; instead of a 55% surcharge for drivers under 25, for instance, they wanted 100%.

The insurance commissioner, however, rejected the companies' proposal for under-25 drivers. Commissioner Humphreys said: "I agree that Class I (over-25) drivers subsidize that group, but I know the greater portion of under-25 motorists are good drivers and I do not think it wise to apply the entire surcharge to the whole group."

• Power—In Massachusetts, unlike other states, the commissioner has complete responsibility for setting rates. The companies have no voice except to supply him with total claim costs and whatever other statistical data he may request to aid him in his statutory duty of establishing "adequate, just, reasonable, and non-discriminatory premium rates." In other states, including New York, the companies set rates subject to approval of regulatory authorities.

The Massachusetts commissioner is required to hold a public hearing before he puts into effect the rates he decides on. These hearings, the companies insist, "... have become as worthless as they are disorderly. Members of the general public rarely attend, which leaves a clear field for a few headline-hunting individuals to turn the proceedings into a bedlam of irrelevancy and invective."

• Long History—Because politics enters the picture every time there is an upward rate readjustment, Massachusetts casualty companies have had a long history of difficulties in trying to get the premium income they believe is necessary—and a long history of losses on the compulsory business. All they ever hope to do, they say, is to break even on compulsory business—as distinguished

H-R ENGINEERING H-R POWER TRANSMISSION DRIVES FREIGHT CAR MANEUVERS Freight handling efficiency was materially increased at Corn Products Refining Company's Pekin, Illinois, plant, with this Jones two-way car puller. To move cars on either siding, the operator merely hooks a cable to one of the cars and pushes a button on the control panel. Only a small part of one man's productive time is needed, and the system is both safer and faster than former methods. The Jones car puller is but one of the many types of Hewitt-Robins equipment for helping industry solve its bulk materials handling problems. To find out how H-R products and services can help you, consult your classified telephone directory for the nearest H-R representative, or contact Hewitt-Robins, Stamford, Connecticut. TEROE THE NAME THAT MEANS EVERYTHING IN BULK MATERIALS HANDLING SYSTEMS..

Rockwell Report



by W. F. ROCKWELL, JR.

President

Rockwell Manufacturing Company

MANUFACTURERS WHO SERVE any major industry are faced with a recurring problem each year during that industry's annual meeting or convention. It is the custom—and a good one—

for suppliers to support the industry at that time with advertisements which point out the industry's accomplishments.

The recurring problem is this: How to say nice things about the industry that are not exactly like the nice things other suppliers are saying—to the point where none of it sounds either interesting or believable.

Fortunately we have no such problem this month during the annual meeting of the American Gas Association. We have only to report factually on our experience, not as suppliers (the gas industry is one of our largest customers for Rockwell-Nordstrom valves as well as for Rockwell gas meters and regulators), but on our experience as users of gas.

In 1952 we began an expansion program involving new operating facilities in regions where control of both temperature and humidity was important. We specified gas air conditioning in the first of these new plants, at Sulphur Springs, Texas. The results of that installation influenced us to incorporate gas air conditioning in all of our new plants built since then. And all of these installations have more than paid for themselves through reduced costs of operation and increased plant efficiency.

Workmanship, for instance, is better—at lower cost—because there are no wide temperature fluctuations in tools, fixtures, and machined parts. Inventory and equipment cost savings result from elimination of rusting due to excessive humidity. We attract better qualified people because working conditions obviously are better. And these people produce more because they are comfortable.

So, out of our own experience, we can say with a great deal of conviction that natural gas is one of America's fastest growing industries because it performs an extremely valuable service, at surprisingly low cost.

Engineers of our Meter and Valve Division have developed still another new application for the Rockwell-Nordstrom valve. Around it they have designed a pneumatically controlled, cylinder operated lubricated plug valve regulator to provide high pressure gas regulation with minimum pressure loss. It is intended primarily for such applications as high pressure transmission lines, storage and town border stations.

As a part of our five-year program of plant expansion, our Delta and Walker-Turner power tool plants at Bellefontaine, Ohio, and Tupelo, Mississippi, have been considerably enlarged. We have been told that we now have two of the largest and most modern plants in the world for the production of power tools.

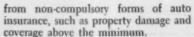
Earlier this year our Meter and Valve Division published a new 110-page gas meter repair manual, the first complete manual of its kind issued since 1940. While it was, of course, intended for use by maintenance men and engineers, its information is so complete, detailed, and well illustrated that it is also being used as a textbook by students of gas metering.

One of a series of informal reports on the operations and growth of the

ROCKWELL MANUFACTURING COMPANY

PITTSBURGH 8, PA.

for its customers, suppliers, employees, stockholders and other friends



• Last Year's Battle—This fall's disagreement, which is generating more heat than most, began a year ago when the gubernatorial campaign was in full swing, with the Republican lieutenant governor, Sumner Whittier, campaigning against Furcolo.

Commissioner Humphreys, a Republican appointee, set rates for compulsory insurance that allowed the companies a statewide average of about 50¢ more per car. The companies howled and promptly appealed the decision to the state Supreme Court. In presenting their case, they brought reams of upto-date data, while the commissioner used much of the same material used the year before. The court annulled the rates he had set and ordered him to set new ones based on the new material. The companies wound up last May with a 19.6% increase.

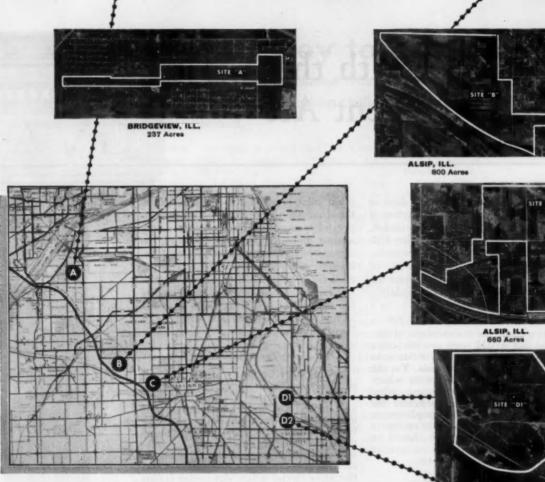
• Legislative Fire—After the election, which Democrat Furcolo won, a special 15-man commission began looking into the situation—on a \$500 budget. Later, the legislature voted \$50,000 for the new inquiry now in progress.

Perhaps the most vocal member of the commission is State Sen. Harold W. Canavan, a Democrat, who says he's only trying to "clear the air." He declares, "If what the insurance companies say is correct, then I'll accept it. No one knows what goes on inside an insurance company when it comes to setting rates on compulsory insurance."

Canavan says he'd like to know, among other things, the salaries of executives, how much the companies pay in rent and other office expenses, and what percentage of the total expense is charged to the compulsory auto insurance end of their business.

• Back to Mathematics—After the insurance commissioner announced tentative 1958 rates last week, Gov. Furcolo pointed out that he had recommended a "consumers' council" as a device that would be helpful, but that the legislature had turned down the suggestion. The governor said, "The commonwealth . . . is at a disadvantage in combating the insurance companies' case. That is the whole story of the consumers' council; that the persons paying the rates have qualified representatives, because these are intricate technical matters and the best actuarial experts are working for the insurance companies."

A major step the commission has taken in this direction has been to employ an outside actuarial firm to make a thorough study of the records. The companies say they are delighted to have outside actuaries look over anything they like, especially if it will help to get insurance rates away from politics and toward mathematics.



Five Chicago plant sites

within a few miles of the famous Loop

CHICAGO, one of the world's greatest centers for railroad, highway, waterway and airway transportation, offers endless opportunities as a location for establishing a manufacturing plant, branch plant, or distribution operation.

Five ideal plant sites are described and illustrated in our new brochure "The Greater Chicago Area Industrial Sites."

These New York Central properties are situated within 17 miles south or southwest of Chicago's Loop. They are served by the Indiana Harbor Belt Railroad of the New York Central System providing shippers short hauls and swift transportation to the nation's richest markets.

In addition, the vast number of special business and industrial services and facilities in the Metropolitan Chicago area present unusual advantages for manufacturers and distributors to operate successfully.

New York Central has other properties in the Greater Chicago area that lend themselves to development as plant sites. There are also additional good industrial sites available along the entire route of the New York Central Railroad. Let us help you find a Central location that meets your particular requirements.



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Send for illustrated brochure today—

no obligation



A copy of "The Greater Chicago Industrial Sites" brochure will be sent to executives, free of charge, when requested on a business letterhead.

Write to: H. W. Coffman, Manager Industrial Development Dept. C, New York Central Railroad, LaSalle Street Station, Chicago, Illinois.

New York Central Railroad

Route of the "EARLY BIRDS"—the one-day faster freight service

Living with the Employment Act



INTRODUCED in the closing days of the 1957 session and awaiting action at the 1958 session is a bill which, if enacted, could by itself distinguish the Eighty-fifth Congress for constructive achievement. Sponsored by Senator Prescott Bush of Connecticut, it is a measure to amend the Employment Act of 1946 by declaring stabilization of the cost of living to be a primary aim of Federal economic policy.

At first glance, the maintenance of currency stability would seem too obvious a duty of any responsible government to require such explicit affirmation. Yet the multifarious economic objectives which governments nowadays are being called upon to promote, and in particular the objective of continuous full employment, are being found very difficult to reconcile with currency stability, which should be the first objective of all, if only because the others ultimately depend upon it.

Why Currency Stability Needs Affirmation

Governments still uphold currency stability in principle, but in practice "creeping inflation" is being allowed to occur in many countries under the pressure of other demands, and in some quarters governments are being advised to abandon currency stability entirely and adopt "creeping inflation" as a regular policy. In an environment as unwholesome as this, there is a real need not only to define currency stability as a primary aim but to give it the force of a practical directive to financial authorities.

If the basic necessity of price stability were universally accepted, understood, and observed in practice, there would be no need for an explicit statutory declaration of it. Unfortunately, it is not universally accepted, even in principle; and where it is nominally accepted, it is too often "more honored in the breach than in the observance." The world-wide depreciation of currencies, the persistent outcry against "tight" money, and, above all, the advocacy of "creeping" inflation as a deliberate policy show only too clearly the need for a definite and unmistakable declaration of national purpose, especially by the nation which is everywhere regarded as the leading exemplar and exponent of "hard" money.

Long-Term Advantages

Adoption by Congress of the proposal to write the objective of currency stability into the Employment Act would presumably have little or no immediate effect upon monetary and credit policy, since the Federal Reserve is already doing its utmost to promote that objective. Such a declaration of policy might, however, have a most salutary effect in both Congressional and Executive circles where day-to-day action tends to waver between economy and extravagance. It might well strengthen the hand of foreign governments that are waging what now looks like a losing fight against inflationary pressure. It might equally well tip the scales in favor of our own Federal Reserve at future times of strong political opposition. At the very least, it would discredit "creeping" inflation, not only as a deliberate policy but also as an inherent tendency arising from extreme interpretations of the Employment Act itself.

From the October issue of The Guaranty Survey, monthly review of business and economic conditions published by Guaranty Trust Company of New York.

The complete issue is available on request.



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Credit Becomes a Key to Car Sales

More and more buyers depend on installment financing, stretching repayments over 36 months. It's getting costlier, but lenders say they can meet demand.

Detroit's success with its 1958 models is more than ever dependent on the installment money market. For years, a larger proportion of car buyers each season has been buying on time-payment plans, and this year's price increases are expected to give this tendency another nudge.

In 1948, only 42% of all car buyers needed loans to finance their purchases. In 1955, the auto industry's best-ever year, 57% of sales involved credit. Last year, the figure soared to 69%, and it's running slightly higher so far this year.

Reliance on credit varies from month to month during each year. For the first few months after new models are introduced—from October or November to about April—the cash buyers are at their strongest. After that, the percentage of sales made on credit tends to rise, with a peak at model clearance time in August and September, when the bargain-hunters come out.

• Bulk Increase—Not only are more people buying cars on time but their total debt is also rising. In July, according to the latest report by the Federal Reserve Board, outstanding auto credit amounted to \$15.3-billion—a 6% increase over the \$14.4-billion of the same month of 1956. As recently as Jan. 1, 1955, only \$9.8-billion of auto debt was outstanding.

Other types of debt also cut into the public's ability to buy autos. So it's significant that the July report shows a 14% spurt in personal loans in a year, and a 10% increase in home mortgage debt, which reached \$103.3-billion. The personal loan increase helped to push total consumer debt, which includes auto loans, to \$42.9-billion for a 7% increase in a year.

Bankers and auto marketers are troubled by the fact that all of these forms of debt have grown faster than personal income. In the year ended last July, personal income rose only 5%.

• Plenty of Money—Finance companies foresee no letup in the growth of auto debt, nor do they see any great difficulty in meeting the demand. "There will be no shortage of auto credit next year," one company spokesman says flatly, and others talk along the same line.

• . . . At a Price-But loans will be more expensive. The finance companies have to borrow, too—"money doesn't grow on trees," says Pres. Arthur O. Dietz of C.I.T. Financial Corp.—and they are paying higher interest rates

that must be passed on. C.I.T.'s money costs, for example, have gone up 1.1% in two years.

Banks in New York already charge 3½% interest on car loans on a discount basis, which works out to about 6½% in annual simple interest. A year ago, the rate was 3½% on a discounted note.

Charges by finance companies are computed differently and vary from one region to another, but they run considerably higher than bank rates. They, too, are going up. On a simple interest basis, Dietz estimates, they have climbed about 1% for new cars and 2% for used cars during the last two years.

 Tighter Terms?—It doesn't show in the continued expansion of auto credit, but banks and finance companies declare they are becoming more selective in their loans.

Certainly they are tougher these days about downpayments than they were in, say, 1955. In that lush season for car-buying, the buyer's equity in a car for the first several months was so small that a finance company took an outright loss in repossessing it.

However, the length of time to pay back a loan is even longer today than in 1955. The rising price of automobiles is one reason for this.

Before the 1955 boom season, credit was generally available for 24 to 30 months. "As car prices have gone up since then," says Pres. Charles G. Stradella of General Motors Acceptance Corp., "the industry in effect has been able to hold monthly installments level by gradually lengthening terms to as long as 36 months. Now 36 months is generally accepted as the standard limit, and we here at GMAC feel this line should be held."

As car prices increased, one company found that the average monthly payment by its customers crossed the \$80 mark a year ago and is headed higher. Price tags on the '58 models are expected to run \$50 to \$100 higher than on '57 models. If the 36-month limit on maturity terms is held, the extra cost will go into monthly payments, also increasing the buyer's total cost of financing.

"The 1958 price increases will to some degree be passed on in higher monthly installment payments," Stra-

• What Effect?—How much will it take to discourage potential car buyers who still owe \$15.3-billion on the cars they are driving? Detroit, and all the industries related to the auto industry, would like to know. They profess to be optimistic about the acceptability of the price increases, and they point out that loan money, while costlier, is not really tight.

The finance companies are confident of doing as well in 1958 as in 1957 if two things happen:

 If business in general stays good and income high.

• If people like the new models that Detroit is wheeling out.

Commercial Bankers Get a Scolding

Mellon Bank aide says they lose to competitors by not developing new services the public would pay for.

Are U.S. commercial bankers shortchanging themselves—and stunting their rate of growth—because they're too reluctant to make direct charges for services, and to develop new services for which the public would be willing

They are indeed, a Mellon Bank vicepresident told 2,000 country bankers last week. And, he said, it has cost them their competitive position in the financial service business.

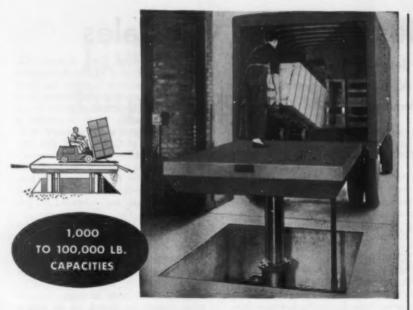
• Behind the Procession—Alexander B. Adams, in charge of advertising and public relations for Pittsburgh's Mellon National Bank & Trust Co., told his institution's annual correspondent bank conference that total assets of banks have declined as a percentage of total assets of financial institutions generally

-from 61.1% in 1952 to 55.8% last year. Assets of each other group in the category have moved up.

The future doesn't look bright unless banks do something, Adams warned. Between 1952 and 1956, the number of families with a minimum \$5,000-a-year income increased by 59%, he said, but "these new families with increased income are not turning to the banks" in the numbers they should.

In three lines, Adams declared, banks have sold less effectively than their com-

 In personal savings, banks have lost position. All financial institutions have failed to sell the savings concept, and all savings, proportionately, are down, said Adams—but except for banks, postal savings, and U.S. savings bonds,



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all financial institutions concerned with savings have increased their share in the last four years.

• In mortgage credit, the commercial banks' share dropped from 24.4% in 1952 to 20.4% in 1956—though the U.S. consumer is spending 6% more of his income on housing.

• In installment credit, commercial banks dipped from a 38.7% participation in 1952 to 37% last year.

• Remedies—Adams sees four avenues that must be trod if commercial bankers are to regain their share of the financial services market:

 Banks must adopt present-day marketing techniques on a wide scale by finding out what the consumer wants, developing the service, and then letting him know it's for sale.

 Legislative restrictions that now apply only to banks will have to be broadened to cover their competitors.

 New services—and charges made for them—will have to grow. Adams believes the public would pay for services it wants, but "we bankers are so accustomed to our profits on loans and investments that we shy away from direct charges." Such profits—he said—won't cover the cost of needed financial services.

 Increased importance will have to be attached to non-credit functions of bank management. In 10 or 20 years, Adams predicts, "the variety of skills to be found in a bank will closely resemble those found in other lines of business."

FINANCE BRIEFS

New York City banks charged an average 4.26% for short-term loans during the first half of September, the Federal Reserve Bank of New York reported. Four previous surveys showed an average of 4.14%; the increase since then parallels the August increase in the prime loan rate from 4% to 4½%. Measured by size of borrowing, the biggest increase was in loans of \$200,000 and up.

Utilities will need \$45-billion in new money by 1970 if they are to fill the expected demand for energy, predicts Pres. Charles E. Oakes of the Pennsylvania Power & Light Co. He says another \$25-billion must be provided by depreciation and retained earnings.

Ten banks in four cities will lend \$52-million to American Gas & Electric, with the interest rate pegged at \$1 point over the prime commercial rate (now 4½%) charged by the First National City Bank of New York. Proceeds to the utility holding company will go toward its \$670-million construction program for 1957-1960.



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In Washington

Washington Society Goes Wild Over Queen's Three-Day Visit

Washington, which takes in stride a steady procession of visiting foreign dignitaries, almost lost its social equilibrium this week over the Thursday-to-Saturday visit of

Queen Elizabeth II of England.

Top-drawer government officials and their wives-and the capital's gushing corps of society writers-worked themselves into a delicious dither for the occasion. High fashion designers were besieged with demands for new frocks in yellows, reds, and blues-advance word from Britons warned the Queen doesn't like to see women dressed in black, no matter how chic.

Formal dress, at rental of \$10 a day and up, was in great demand from men around the White House, State Dept., and the various embassies. Most popular item: the British-inspired "stroller" suit, featuring a formal cut-

away coat without tails.

Hotels rented rooms overlooking Pennsylvania Avenue, route of the Queen's Thursday welcoming parade, to parties of onlookers for just a few minutes. One hotelman called it "just like a Presidential Inauguration Day,

except this is for a much shorter period."

The Queen and her husband, Prince Philip, and part of their entourage of secretaries and servants had accommodations in the White House. The rest were lodged in the Hotel Statler, which had only a few days earlier housed a national conference of Children of the American Revolution.

Want to Get Rid of Controls Over Discounts on FHA Mortgages

Federal housing officials are writing off mortgage dis-

count controls as a dismal failure.

Over Administration protests, Congress wrote the controls into the 1957 Housing Act in an effort to establish minimum prices that investors must pay for FHA or VA mortgages. Addressing California realtors last week, federal housing chief Albert Cole stated the Administration's objections in the strongest terms yet. Discount controls are, Cole said:

· "Price-fixing in its worst form."

· Responsible for "the disappearing of investment funds.'

· A stimulus for recent growth of second and third mortgages under conventional financing-which, unlike FHA and VA programs, is subject neither to mortgage discount regulations nor to a ban against multiple mortgages.

Cole's outburst probably foreshadows a formal Administration demand to Congress next January for repeal of discount controls. Both House and Senate housing subcommittees are studying housing problems, and both are known to be gathering expert opinion on the impact of regulated discounts. By the time Congress reconvenes, the Administration line probably will have widespread

It's Antitrust Hearing Time Again; Steel, Oil Companies Face Probes

A familiar commotion will resume in Washington next week-antitrust hearings, this time on two Con-

gressional fronts.

Sen. Estes Kefauver (D-Tenn.) will renew his inquiry into administered prices on Monday, with Pres. Arthur B. Homer of Bethlehem Steel Co. as the first witness. The senator will probably keep Bethlehem witnesses on the stand for at least three days in an effort to find out why Bethlehem and other steel companies follow prices set by U.S. Steel, in some cases right to the penny.

When National Steel Corp. takes Bethlehem's place in the hearing room-possibly on Thursday-Board Chmn. George M. Humphrey, who left the Cabinet in July after more than four years as Secretary of the

Treasury, may testify.

Rep. Emanuel Celler (D-N. Y.), chairman of the House Judiciary Committee, will launch hearings to probe consent decrees reached by the Justice Dept. with four major oil companies. The first witnesses will be from the Antitrust Div. of the Justice Dept. Others will come from the Interstate Commerce Commission, the American Petroleum Institute, and the companies themselves.

Housewives Plump for Better Kitchens, More Light Plugs, Less Buying on Time

The ladies had a chance last week to make public their every whim on the layout of a house. Meeting in Washington at a Congress for Better Living, promoted by McCall's magazine, 100 women reported on how they want their homes to be designed-and what trappings they would like inside.

Some of the findings:

• Most of the women spend 3 to 6½ hours a day in a kitchen that doesn't have enough counter or storage

· Two-thirds of them use the basement or utility room for laundering, but they would like the kitchen

to be more of a utility room.

· They want more flexibility in the kitchen, so that it can be used for dining, working, hobbies, and entertaining.

· They want more electrical outlets. Most of them, weary of table and floor lamps, prefer overhead and

built-in lighting-including indirect systems.

· Husbands should spend more money on fixing up the house, instead of spending it on bigger, more expensive cars. · Morally. they're against installment buying-ex-

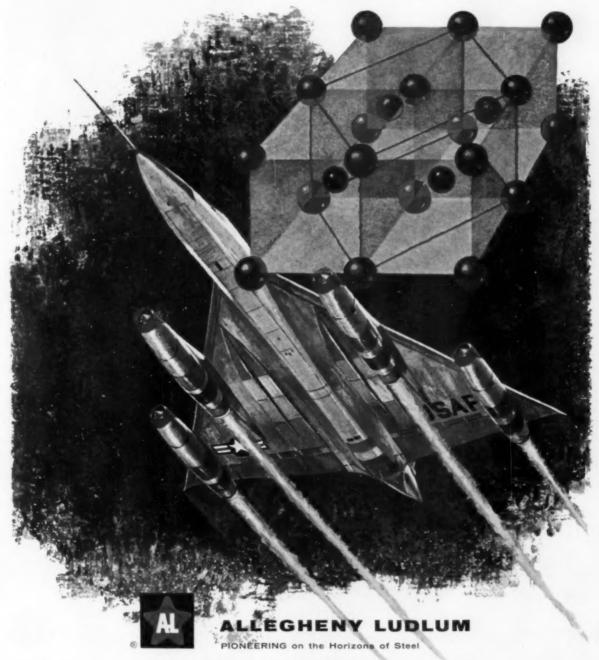
cept for really big-ticket items.

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In Business Abroad

J. I. Case Taps Herbert Bloom To Run Its New Overseas Outfit

Herbert H. Bloom (picture), whose 33-year career with Massey-Harris-Ferguson was terminated last year, this week became the head of a new farm equipment company, J. I. Case International, S. A. The new outfit is a

9.00

wholly owned subsidiary of J. I. Case, Racine, Wis., and will take over Case's overseas operations.

Bloom's appointment apparently heralds a big push by Case overseas, probably the establishment of manufacturing operations abroad. Announcement of the appointment follows similar moves by another

U.S. farm equipment maker, Deere & Co. (BW-Oct. 12'57.p94).

At Massey-Harris, a Canadian organization noted for its worldwide farm implement operations, Bloom rose from sales manager to president of the company's U.S. subsidiary. He left in last year's shakeup brought about by the resignation of the company's long-time president, James Duncan.

Bloom is the third Massey-Harris executive to join Case in recent weeks. William Drier, formerly vice-president for domestic sales for the Canadian company, and Alexander Kovacs, who was European sales manager, now hold key sales positions in the new international organization.

Irish Distiller Here to Sing Praises of His Country's Spirits

Desmond Williams, Irish whiskey manufacturer and industrialist, arrived in the U.S. last week to begin a tour of North America. He hopes to capitalize on the interest in Irish products generated last year by the visit to the U.S. of Dublin's Lord Mayor Robert Briscoe.

Williams also hopes to push his company's new product, a liqueur, as well as whiskey. He points out that Ireland is particularly short of foreign exchange now, that such exports as whiskey, tweeds, and food products—as well as thoroughbred horses, the country's largest foreign exchange earner—are more important than ever. The Irish Republic's whiskey, which once sold all over the world, is a super-luxury product, selling at prices above Scotch imports.

Williams says the Irish ought to be telling Americans about the high quality of their whiskey. (It's distilled MORE NEWS ABOUT BUSINESS ABROAD ON:

- P. 126 Financial Experts Are Increasingly Concerned About World Trade Outlook.
- P. 133 Brazil—With Coffee Prices Shaky— Is Facing Critical Financial Problems.

three times instead of the usual two, matures for a minimum of seven years.) But high taxes in the Republic, he complains, have cut Irish domestic consumption, preventing Ireland's five major distillers from launching the kind of promotion campaign here they would like to.

Japan's Toymakers Blast Charges They Use Poisonous Lead Paints

Japan's toymakers are steaming mad over what they charge is a campaign of "malicious, unfounded" charges in the United States against Japanese products. Tokyo says American organizations have been spreading the word that Japanese toys are coated with paint containing enough lead to be poisonous. They deny it.

The situation is important to the Japanese who sold \$50-million worth of toys last year, \$34-million in the U.S. market. The Japanese say one unnamed U.S. importing company canceled a \$70,000 order, then authorized payment because it was already in shipment.

Both Japanese and U.S. export officials in Japan contend the charges have no foundation. While the Japanese claim their investigations show the paint used isn't dangerous, they will take no chances in the future: They are planning not to use paint containing lead, also to make a chemical analysis part of their export inspection system.

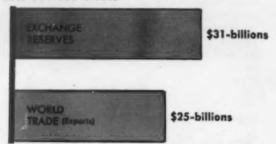
Argentina Signs Up Houston Firm To Build Two Oil Pipelines

Argentina's state-owned oil monopoly, YPF, this week signed a contract with Fish Engineering Corp., Houston, and TIPSA, an Argentine concern, to construct two pipelines and treatment plants. YPF officials say the \$185-million job will double its annual production—relatively simply, according to YPF, since oil is already available and it's just a matter of transporting it.

The project includes a 1,015-mi. 24-in. pipeline to carry gasoline from Campo Duran to Buenos Aires, and a 580-mi. 12-in. pipeline to carry oil from Tucuman to the San Lorenzo refinery. Completion is called for in 24 months. The Argentines will make payment on the following terms: 25% the first year, 15% the second year, 25% the third year, 15% the fourth year, and 10% the sixth year. After the second year, the balance bears 5½% interest, plus 2% "financing charges." Buenos Aires, with its gold and foreign exchange reserves at rock bottom, will pay 25% in Argentine pesos, 60% in European currencies, and 15% in dollars.

The non-Communist world today finances about four times as much trade as prewar with only twice the reserves. This imbalance means....

PREWAR (1938)



NOW (1956)



Will World Boom Turn to Bust?

THE CHOST of the Great Depression is beginning to haunt a widening circle of international financial experts in Washington and the capitals of Western Europe. This group, although still a minority in Washington, includes some people in the International Monetary Fund, the Commerce Dept., and the State Dept.

These men refuse to accept the official line taken at the September meeting of IMF—that inflation is the No. 1 threat to the free world economy. They are convinced instead that deflationary policies have been pushed too far, especially in the U.S. If these policies aren't reversed, say these men, the current world boom could bust resound-

 Hints of Danger-Here are some of the warning signs, as seen by this school:

 Prices have been sliding for some time in most of the primary commodity markets, and no upturn is in sight. As a result, a score of primary producing countries are suffering payments trouble; to protect their monetary reserves, they have tightened import and exchange restrictions. Some primary producers, such as Brazil, are just about broke (page 133).

Shipping rates have declined than ly

 U.S., Canadian, and British stocks have fallen so heavily that financial strains are spreading throughout the world.

 National and international hard currency reserves are inadequate to meet the widening balance of payments crises of the primary producing countries. If vigorous action isn't taken, the trend could end in a drastic reduction of exports by the industrial nations.

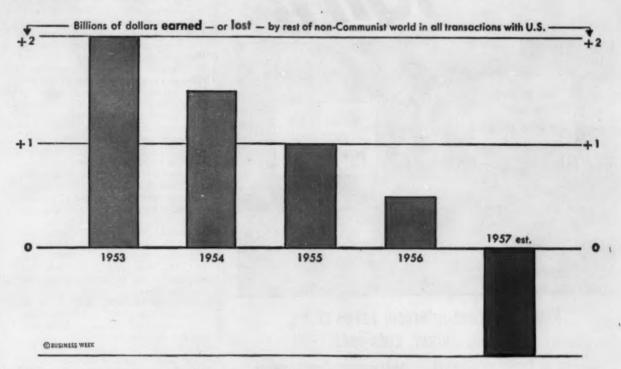
• U.S. economic activity has leveled off, and this—plus deflationary measures elsewhere—is largely responsible for the softening of commodity markets. If the U.S. economy should go into a real decline, the shock to many foreign countries could prove catastrophic

• U.S. exports—still running at a record annual level of better than \$20billion—have been a sturdy prop to the U.S. economy. Now, however, some downturn in exports is inevitable by early next year at the latest. Some trade analysts say they could drop as much as \$5-billion next year—enough to shake the U.S. economy if it is already headed down.

All in all, say the pessimists, the free world is on the brink of an economic plunge. Unfortunately, it cannot easily use the Keynesian remedy-financial expansion to check any slide-because it is trying to roll back inflation. The U.S., Britain, and France are tightening credit at home, even at the cost of suspending economic growth for a year or two. For each country by itself, that may be the right policy; collectively, it may be the road to disaster.

• Not All Agree—Many U.S. officials, especially at the Treasury and the Federal Reserve Board, pooh-pooh these fears. Perhaps many countries are suffering a hangover from their inflationary excesses, say these men. But that's no reason for the U.S. to invite a resurgence of inflation. In this view,

There's real danger of currency troubles and a trade recession now that the U.S. has reversed its "good creditor" role.



The Warning Flags Are Up

the U.S. economy is going through nothing more than a mild and healthy readiustment.

The fact is that the free world has been expanding gaily and without much thought, until recently, of the inflationary dangers. So producers of raw materials and basic services have been expanding output capacity. Government stockpiling has added to the pressure for more capacity. Calculations of long-term growth, such as those in the Paley Report, were taken for granted. Underdeveloped countries were encouraged, in part by U.S. foreign aid, to make grandiose plans. Huge commitments have been made on the assumption of continued regular expansion of demand, particularly in the U.S.

• Is a Bump Necessary?—Now the problem is whether the boom can be deflated gently—or whether it must come down with a bump. As 1953 showed, a minor drop in U.S. demand can be offset by an increase in Western Europe. So far this time, U.S. demand is only leveling off—but in Britain it is doing the same. And any further rise in Ger-

many will be offset by declines in France and Scandinavia.

If money were eased soon in the U.S.—in time to cause a quick upturn in U.S. orders for raw materials—the troubles of the primary producers might not cut too deeply into the exports of the more advanced countries. But, the pessimists say, the problem is probably too big for a purely national approach. It is aggravated by an international liquidity crisis.

This arises basically from the inadequate stock of gold and credit to finance the present volume of world trade; it is compounded by the current drain of funds to the U.S. (charts, above). The problem has been sharpened by widespread losses in the stock and commodity markets.

• Commodity Woes—In the commodity markets, softness affects all the major metals except for iron ore. Rubber, wool, and newsprint are showing weakness. Many foodstuffs are also dropping in price, with coffee in the lead. Cocoa is kept high because Brazil is withholding supplies.

The situation in the coffee market is reminiscent of the sugar market's collapse in 1929 and 1930. Under increasing pressure from high production almost everywhere, prices have sagged badly. True, the price steadied slightly last week. But Washington experts say this can't last—it was due to anticipation of support operations. Support programs are costly in foreign exchange, as Brazil's Vargas government proved in 1954. And, at this stage, neither Brazil nor Colombia has the reserves to hold its coffee off the market for long.

Last month, it looked as if the drop in commodities might have halted. But since then the base metals—copper, lead, and zinc—have declined farther. Tin is only sustained by the buffer stocks. Aluminum, platinum, and mercury are in surplus, and a nickel surplus has been feared since Washington ended stockpiling.

• Help to Hindrance—For the major

 Help to Hindrance—For the major industrial countries, low raw material prices are a help at first, because they bring favorable terms of trade. Britain,

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"... because of the slump in freight rates, many ships are now sailing at a loss..."

STORY storts on p. 126

for instance, now gets more raw material imports for each unit of its exports. Low costs also help counter inflation.

Low costs also help counter inflation.

But raw material producers soon find their own export revenues cut. Then they have to reduce purchases abroad, delay or abandon development projects. This reduces export opportunities for the industrial countries—particularly those that sell largely to underdeveloped countries, as Britain does.

Already, earnings have been sharply reduced in nations such as Rhodesia and Chile (copper), Malaya and Indonesia (rubber and tin), Ceylon (rubber), and India (jute, minerals). The foreign exchange reserves of at least 15 primary producers have dropped since the start of the year.

Australia, which built up reserves last year with bumper earnings from wool and wheat exports, will barely break even this year. That's because both wool prices and exportable wheat tonnage are down.

Oil is another weak spot. So many plans had been geared to a huge expansion of world oil demand over the next two decades that the temporary drop in sales has had a sharp impact. This has hit a large number of industries, from makers of steel pipe to tanker ship-

Because of the slump in freight rates, many ships are now sailing at a loss, and older vessels are suddenly uneconomic. Shipbuilders, choked with orders for the last five to seven years, now fear cancellations.

• IMF to the Rescue?—The International Monetary Fund was set up to deal with just the kind of strains now arising. And during the past year, it has been filling this role actively. It has pumped more than \$2-billion in loans and standby credits into the free world economy, first in response to the Suez crisis, later to offset balance of payments difficulties.

But IMF officials frankly concede that the fund's reserves are inadequate to meet the demands likely to be faced in the period ahead. The IMF now has about \$1.5-billion available in uncommitted gold and dollar reserves—less than half what it had a year ago. Even this overstates its strength. Many countries that are in the deepest balance of payments trouble have already drawn their limit from the fund—50% of their quotas. That includes India, Brazil, Colombia, Bolivia, Egypt, Indonesia, and Iran—and, among the key



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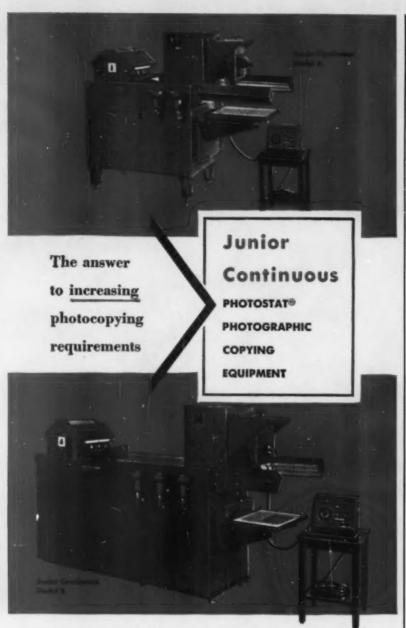
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. . . U.S. private investment abroad has been running at more than \$3-billion a year . . "

STORY storts on p. 126

industrial countries, France and Japan.

One IMF official puts the dilemma this way: "We've kept telling our members that we don't dare lend all our money to finance inflation because we have to hold onto some of it to ease the shock of a possible world depression. Now we're wondering whether we've held back enough."

· Washington's Cure-To meet the threatened international economic crisis, a double-barreled prescription is being offered quietly in Washington:

• The three major monetary powers—the U.S., Britain, and West Germany-must constantly adjust their monetary, fiscal, and foreign trade and investment policies to maintain a close balance in their international trade and payments. If they let themselves get too far out of line, the strain on the dangerously slim international gold and foreign exchange reserves will be unbearable. If they manage to stay in line, swings in trade and payments of the other countries can be covered by their reserves, together with those of the IMF.

The two big creditor nationsthe U.S. and West Germany-should make hefty loans to the IMF. The money would then be loaned, in turn, to countries in trouble. They also should foster private foreign investment, and expanded government aid programs. · Score Sheet-On the first count, here's how the three big monetary

powers stack up: Britain now has tightened the screws on its economy-perhaps more tightly than is politically tolerable-to save the pound. Germany has lowered its bank rate and loosened the screws on its economy in an attempt to work down its trade and payment surplus. The trouble is that the U.S., with a mounting trade and payments surplus, continues to follow a tight money policy-for internal reasons-despite the bad effects on its trading partners.

On the score of contributions to international liquidity, the U.S. gets pretty high marks-higher than Germany, certainly. U.S. private investment abroad has been running at more than \$3-billion a year, and foreign aid spending has been substantial until recently. But measured against its contribution from 1948 to 1955, the U.S. is now doing rather poorly-taking gold and dollars out of international circulation, rather than putting them in. END

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STEEL STRAPPING

Coffee Keeps Brazilians Awake

With a crop surplus, it isn't bringing in the income that Brazil needs to balance its high level of imports of oil, industrial goods, and commodities.

• Foreign exchange reserves are dropping so fast that American creditors, if not the Brazilians themselves, are getting worried about a financial crisis.

Brazil has been in and out of such crises since the war. And if coffee sales continue to pick up, and the price improves, the country hopes to be in the clear.

Despite its continuing industrial boom, Brazil is skirting a financial crisis.

The troublemaker is coffee, which Brazil counts on for 70% of its foreign exchange earnings. Since January, coffee prices have slid some 8¢ a lb.—from 61¢ to 53¢. With prospects of a coffee surplus, U.S. roasters have been holding back purchases. At the same time, the Brazilian government under its price-support program has kept coffee sales in check in hopes of better world prices.

What has aggravated the situation is Brazil's spending spree for imports. While coffee income is down from last year's level, the country is continuing to import commodities and goods

at a fast clip.

• Shrinking Reserves—To pay its bills, Brazil has drawn down its precious gold and foreign exchange reserves at a rapid rate (chart, right). During the first half of this year, reserves dropped some \$164-million.

Total reserves of \$448-million in June tell only part of the story. Of \$324-million in gold, \$205-million is held by the New York Federal Reserve Bank as collateral on earlier loans. And of \$124-million in dollar reserves, \$95-million is a line of credit from U. S. banks. Brazil has already used up some \$38-million of this to weather its financial troubles.

 Crisis Ahead—Both U. S. officials and top Brazilian economists agree that Brazil faces a critical period in the weeks ahead. But they don't harmonize on just how bad the situation is.

Here's the picture on which most U.S. officials and bankers agree:

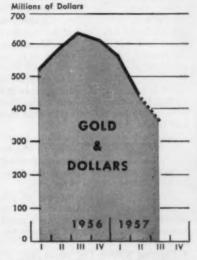
Between January and August, Brazil chalked up a \$157-million trade deficit, compared with a \$107-million surplus for the same period last year. U.S. officials bluntly state that Brazil is living beyond its means.

Coffee prices have been sagging lower and lower. Even worse for the future is the fact that Brazil will have an exportable crop of 18-million bags this season—nearly 6-million more than last season. The 50% increase in coffee exports from Africa and Asia so far this year is another sign of trouble (even though these exports are still small).

What blackens the picture still more, U. S. officials point out, is the heavy demand on Brazil's foreign exchange. For one thing, Brazil must pay \$250-million to \$300-million each year to import much-needed oil. For another, it has to spend around \$200-million annually to service its debts in the U.S. The debt backlog is heavy, with \$435-million owed to the Export-Import Bank alone. Under a special agreement, Brazil could temporarily suspend loan repayments, but Washington is in no mood to let that happen without a fight.

As still another indication of Brazil's

BRAZIL'S Dwindling Exchange Reserves



Data: International Monetary Fund. @BUSINESS WEE

financial plight, its finance minister recently approached leading banks here for more credit. Besides that, he negotiated a \$37.5-million loan from the International Monetary Fund. That makes \$75-million the country has borrowed from IMF—half its quota.

• Worst Jam Yet?—U.S. officials readily admit that Brazil has been in and out of financial crises several times since the war. But this time, they say, there's a difference. The U.S. economy to which Brazil is closely tied may be headed into a slight downturn. And Washington doesn't have the funds right now to help Brazil bail itself out of a crisis.

Brazilian officials are more optimistic. They say that you should not judge this year's trade deficit against the 1956 trade surplus. Last year was one of the best in history for coffee sales. Brazilians also point out that repayments on \$235-million worth of external debts due this year have been right on time through September.

Besides, in the past two months, Brazil's coffee sales have picked up—in volume, though not in earnings. September sales of 1.3-million bags equaled the year-ago sales, but prices were higher in September, 1956. August showed a \$11-million trade surplus, and indications are that September may show the same upward trend.

Brazilians also point out that the country's chronic inflation has been slowing down. Through September, the cost of living increased only 6%, compared with 19% for the same period last year. However, nearly 500,000 workers in the city of Sao Paulo-Brazil's biggest industrial center—are pressing for sizable wage increases that could unleash new price rises.

Another bright sign is the steady inflow of U.S. and foreign capital, amounting to \$90-million last year.

• Coffee Break—But coffee is still the big question mark. While worldwide consumption has been increasing, Brazil's share of the coffee market has stayed about the same in dollar terms—\$1-billion earned each year. To sustain prices, Brazil has tried stockpiling, export controls, crop destruction, and planting restrictions. But the support program, like previous programs, has done little to change the fact that there's simply more coffee available than the world wants.

One answer to the price problem may come out of this week's meeting of coffee producers in Mexico City. Brazil, Colombia, and four Central American countries may reach an agreement to cut shipments some 15% and continue price support programs. END

Pinning Down Retailing Costs

The traditional system of percentages doesn't permit department and specialty stores to calculate their costs precisely enough to compete effectively with discounters.

So NRDGA is expounding a new method, based on patterns of dollar-and-cents costs, that is said to give a sharper picture of the expenses of doing business.

If it is adopted, it means a big change in the way the buyers—the department managers—operate, and perhaps a variety of ups and downs in retail price tags.

This month the National Retail Dry Goods Assn. will stage the first of a series of seminars for top department store executives to explain an accounting method whose general acceptance could have far-reaching effects on (1) retail pricing, (2) manufacturer-retailer relations, and (3) the traditional systems of merchandising cost controls.

The first seminar will be held Oct. 28-30 at Harvard Business School. Another is scheduled for Jan. 20-22 at

Northwestern University

· Nothing Radical-Advocates of the new method-who like to call it a merchandising concept rather than an accounting procedure-have labeled their idea "merchandising management ac-

counting."

Actually, what it all boils down to is the application of standard cost-accounting procedures that have long been used in industry. Up to now, such methods have had no important application in general merchandise retailing. But pressures from other retail outlets-such as discount houses and food supermarkets -have paved the way for department and specialty stores to consider ways of meeting the stiff competition.

One of them is to find a means of determining just what it costs to buy

and sell particular goods.

Briefly, the method, as NRDGA introduced it to merchants earlier this

year, attempts to:

· Allow merchants to obtain cost and profit figures for individual itemsrather than for broad categories of merchandise.

· Substitute dollars and cents for percentages in determining costs and

profit-loss information.

· Distinguish between variable and fixed costs of retail operations to figure each item's contribution to total store

· Arrive at a figure-return on in-

ventory investment-that industry has long found useful in its planning.

· Old but New-To a manufacturer, it may appear startling that this kind of information isn't already available to department store management. But the fact is that most stores operate their business almost the reverse of manufacturing businesses. Ordinarily, manufacturers start with the price of raw materials, add direct costs such as labor and tooling, allocate overhead such as maintenance and plant depreciation, and finally reach a cost per unit, assuming that a plant works at some given level. With these cost figures, a manufacturer sets his price to achieve a reasonable return on investment for each line of goods made.

I. Retail Split

Little of this modern industrial accounting has been used by merchants. In essence, they start with the retail selling price and work backwards.

For example, a buyer enters the market with the idea of buying shirts to sell for \$5.95, \$4.95, and \$3.95-all of them traditional price lines. He applies the normal 40% margin to these prices and figures, so that on the \$4.95 shirt he can pay about \$2.97. The measure of his skill is how good a shirt he can get at that price-or how much under that price he can pay and still get a shirt that will sell for \$4.95.

But there, essentially, is where his responsibility ends. It's not up to him to care about the costs that are involved in moving that shirt through the store. He cares about the markup only.

It's up to the operating end of the store to calculate the expenses of doing business, to determine how much profit is made on that shirt, and to keep the costs under control.

· Figuring Costs-The usual way of

figuring costs for these purposes is to apply wide-ranging expense averages as a percentage of sales—say, 2.5% of sales for delivery charges. These percentages are usually applied across the board, without much distinction between items in any given department.

In other words, a sofa retailing at \$400 is in effect charged with the same percentage delivery figure (in this case \$400 x 2.5% or \$10) as a \$200 sofa (which gets a \$5 charge) despite the fact that it costs the same to deliver

the one as the other.

This ingrained system of percentages permeates the whole department store accounting picture. It developed historically from the retailers' sales outlook, plus the fact that there is so much merchandise of diverse varietyall coming under one general management and roof-that it seemed impossible, if not unnecessary, to get de-tailed figures on individual goods.

This system of retail accounting also made inventory accounting simpler. A merchant knows his selling prices, can subtract the average percentage markup, and come out with a cost of goods sold for valuing his inventory at cost or market price, whichever is lower. If. the retail prices drop, he can adjust his inventory dollar figures quickly.

Unlike the case with manufacturers, the only cost that shows up in inventory figures is that of the merchandise. Operating costs aren't treated as value

· More Realism-For doing business in the aggregate (which, after all, is the telltale figure at the end of the year),

this has proved adequate.

But many attempts have been made to get more realistic cost figures. In 1954, the Controllers' Congress of NRDGA issued an Expense Center Accounting Manual as a step toward isolating costs (BW-Dec.4'54,p110). But this had little to do with the merchandising end of the business

In fact, those close to the field think that the trouble with department store methods traces right back to the basic divorcement between the buying-selling function (or merchandising) and the operating (or expense) end of the busi-

II. Methods Now

Department store accounting is a complex thing for any layman to understand. But, in general, the way a store works is this. Buyers or merchandise managers estimate sales volume at projected markups-say, 40% of the selling



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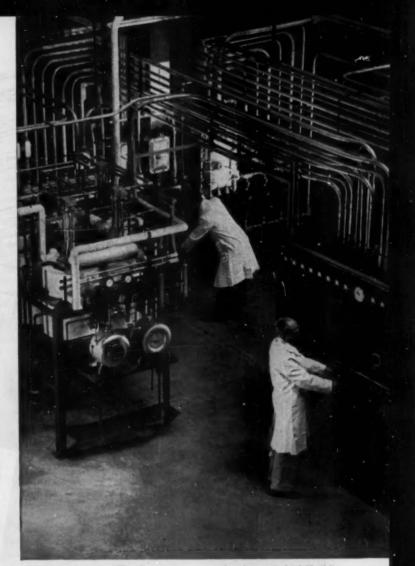
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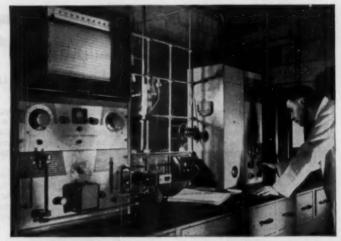
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"... 'the merchandiser tries to maximize the gross margin. Operations tries to minimize expenses. You put them together and hope for a profit' ..."

STORY starts on p. 134

price—and attempt to hold the price at the budgeted figure. These markups, for practical purposes, apply to all items in a department and are traditional in the trade.

Since 1916, stores have been trading percentage information on their operations as a means of measuring relative efficiency, and a unanimity has been established that carries clear back to the manufacturer, who often sets his list price with the knowledge of how the stores figure their margins.

• Budgeting—By figuring estimated markdowns, cash discounts, and inventory shortages, a department in a store comes out with a budgeted gross margin that is something less than the initial markup. So far, no costs—except goods

-are involved.

On the other side, operating or expense budgets-more often than not on a storewide rather than a departmental basis-are estimated. What percentages of these expenses are applied to a given department is a matter of negotiation or general practice. Some allocations, such as buyers' salaries or newspaper advertising, are assigned specifically to a department, but again, in effect, each item in the department is charged with a flat percentage of sales as a cost.

As Sam Flanel, head of NRDGA's Controllers' Congress puts it:

"The merchandiser tries to maximize the gross margin. Operations tries to minimize expenses. You put them together and hope for a profit."

• Buyers' Goal—Thus, gross margins—and the markup percentages to achieve them—have become almost the sole goal of the buyer. His compensation, in fact, is often tied to volume. That means he can come through with big promotions on an item, with heavy delivery or advertising costs, to make his budget. He may actually be losing money. Even tied to gross margins, his compensatory incentive itself can create losses, since such margins are figured without taking into account the added costs incurred to get extra volume.

In effect, the buyer-virtually the key man in the store-is divorced from profit-and-loss responsibility.

• Hard to Pin Down—In addition, the retail method can obscure which goods pay off. For example, a 40% markup on a refrigerator to retail at \$200 (and markups are figured on retail price) gives the retailer an \$80 margin. On a \$400 one, it gives him \$160. If he sells two \$200 jobs, he makes \$160, the same as on one \$400.

Thus, it is natural for him to prefer the bigger ticket item. But he doesn't figure into his costs the money tied up in higher-priced goods or in the extra warehousing or floor space that may result from slower turnover. He may actually be better off selling two \$200 items than one \$400.

On the other hand, by averaging his costs on a sales percentage basis, he loads the top item with unnecessary charges. He could lower his price—but that would affect his budgeted markup percentage, which management uses as a measure of his buving skill.

This, in brief, is the statistical umbrella under which discounters have found so much room to do profitable

III. The New System

Under the system now proposed, general merchandise stores would be severed from this attachment to percentages and average costs. The key to the system is what Robert I. Jones, a partner in the Arthur Andersen & Co. accounting firm, calls cost patterns. He and NRDGA's Sam Flanel, along with Malcolm P. McNair of the Harvard Business School, will try to put their idea across in the forthcoming seminars.

Patterns—The system starts by assigning dollar costs per unit to various functions that take place as goods move through the retail operation—such things as receiving, warehousing, selling, advertising, credit expense, delivery, installation, markdowns.

According to Jones, in any one department there are only a relatively few different unit costs for each of these functions—perhaps a half-dozen or so.

On top of this, the various departmental items tend to fall into a restricted number of cost patterns. That is, after studying all items in a department, Jones has found that each can be charged with one of, say, 12 combinations of unit costs for all the functions. You'd have one for refrigerators, one for dryers, one for another appliance. Also, you might have one for those manufacturers who provide extra services in packaging or promotional allowances in contrast to those who don't.

Thus, says Jones, you are dealing not with hordes of items, each with its own costs to figure out, but only a dozen or so in a department.

• Dollars and Cents—It's important to remember that these cost patterns are

built mostly from dollars and cents, arrived at by analyzing present operations, and not costs as a percent of sales, as they are now figured.

The method also differentiates between fixed and variable costs. The cost patterns don't allocate to particular items the fixed charges, such as administration, buying, or occupancy. All of these costs go on regardless of what you are selling or at what price or volume.

By adding up the costs of one of the patterns, subtracting that from the margin on which you are operating for an item, you arrive at how much each unit contributes to covering overhead at any particular volume—a sort of preliminary but controllable profit.

Chartable—At this point, it is possible to draw a series of charts for each of the dozen or so cost patterns. These charts will show the buyers the amount of controllable profits that will be produced by various combinations of selling prices, markups, and cost patterns.

Such information, except in the vaguest sort of way, has not been available before. Now the buyer can know before a purchase what to expect and thus can project results.

There are refinements possible, too. If it appears, for instance, that the size of any order or the transportation costs between various methods is important, separate sets of data can be pulled out to show what happens to costs when varying quantities are shipped or different modes of shipment are used.

IV. The Effect

It is hard to measure just what effect adoption of such internal merchandising accounting methods will have on a store. But it is logical to assume there will be major repercussions.

General Electric Co., for one, thinks it can have an important bearing on the price structure. Its Housewares & Radio Receiver Div. has hired Arthur Andersen, through Jones, to study the effects by applying the system to a number of large retail stores on a test basis.

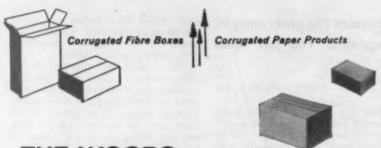
large retail stores on a test basis.

It is interested because two years ago it startled the retail trade by announcing sharp price reductions on small appliances by cutting traditional margins all along the line (BW-Dec.31'55, p21). It was a move to offset discount house prices, but it raised a storm of controversy at the time.

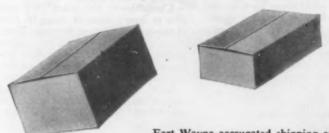
Now, according to J. M. Sammet, manager of customer relations, GE wants to help retailers "determine the factors regarding the precise profitability of electrical housewares" (especially GE products).

This method, GE thinks, will give retailers a truer picture of just what it costs to merchandise its goods at retail.

• Help in Decisions—One thing is cer-



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GENERAL OFFICES FORT WAYNE 1, INDIANA

A copy of the company's latest financial report may be obtained by writing to Harold M. Treen, President, Fort Wayne Corrugated Paper Company, Fort Wayne 1, Indiana,





tain, if the system can be made to work, it will give buyers a stronger basis for making decisions than they ever had before. For instance, since a buyer will be able to see unit profits, he can estimate the effect on his dollar figures when he either lowers prices or accepts less margin-or, for that matter, raises

Automatically, the factor of increased turnover that might come from lower prices can be taken into account on a dollar-profit basis-assuming, of course, the buyer can estimate the effect of the new price on his volume.

That isn't possible now when the buyer goes into the market. Ordinarily, he goes in with a set of price lines in mind, applies a normal percentage markup to establish what he ought to pay to achieve a certain margin-and makes the best deal he can, taking into account quality, style, availability of merchandise.

· Pav Basis-NRDGA's Flanel thinks the new system, to work, must be used as a basis for compensation. If this is done, it should go a long way toward breaking down the traditional gross margin goals, since a buyer won't be measured by them.

Buyers also will have guides to show which articles they should promote, whether by increased advertising or offering special inducements such as price concessions. They'll know just what effect such promotions have on profits-and, just as important, so will management.

On the other hand, they can use the profit figures in arguing with manufacturers about their margins. They would have facts, not tradition, on their

· Effect on Price Tags-There is a great likelihood, of course, that strict application of the technique could sharply reduce some prices through reassessment of traditional markups of various lines. It might also boost prices of items that haven't been carrying their proper weight of expenses. Flanel admits there might be price

effects, but none revolutionary. "It will have a more subtle effect," he says. "When the facts are known, though, we'll be able to have better informed judgments.

Manufacturers haven't been invited to participate in the coming seminars, largely because of the early stage of development. NRDGA figures it will be a year or two before an action is taken on whether or not to make formal recommendations to member

But GE is betting, according to Sammet, that the system is a way to "build better understanding between manufacturers and retailers based on a system of accounting that is acceptable to both parties." END

Short cuts with Recordak Microfilming

Latest reports on how this low-cost photographic process is simplifying routines for more than 100 different types of business . . . thousands of concerns.



DOES AWAY WITH CARBON COPIES

LOS ANGELES, CALIF.

General Petroleum Corporation—Socony-Mobil affiliate in Far West—cuts billing costs 50% by microfilming the million-plus credit tickets its customers sign monthly. Compact film copies replace bulky carbons as office record of each purchase, allow centralized accounting. Branches send tickets to home office, where duplicate rolls of film are exposed simultaneously in a Recordak Microfilmer. Tickets are returned to customers. Branch gets one roll of film, home office keeps other. Despite a three times increase in ticket volume in recent years, same staff easily handles job. No longer are 4 days a month spent cleaning out drawers. And any filmed ticket can be found in minutes, and viewed, or duplicated in a Recordak Film Reader.



ENDS TYPING INVOICES

CHICAGO, ILL.

Taking pictures of customer orders with a Recordak Microfilmer ends typing some 300 invoices daily, speeds order handling, saves more than \$5,000 per year for Co-op Electric Supply Co.

Customer orders—on catalog order blanks, post cards, letter-heads—are stapled to self-mailing printed forms soon as received. When order is packed, cost of merchandise and shipping charges are entered and totaled on form. Then a picture is snapped in Recordak Microfilmer for 1/4. This becomes office record. Customer's order goes back to him as the invoice. Co-op Electric, and many similar companies also call this the easiest, lowest cost invoicing system known.



KEEPS TRACK OF EVERY SHIPMENT

NEW YORK, N. Y.

City traffic was a minor headache compared to bookkeeping for the Moledzky Transportation Company. This firm, one of the oldest serving New York's garment center, picks up merchandise in hand-pusher carts and forwards it by motor truck to stores, piers and other terminals. Records are exchanged at every step and the bookkeeping department must keep track of it all.

This was a tedious, costly job when information was transcribed by hand to check sheets. But a snap now: the manufacturer's shipping ticket and corresponding delivery receipt are simply photographed in a Recordak Microfilmer. And there are no errors, no omissions. Total microfilming costs are less than \$600 per year, the savings more than \$5,000.

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Uniformity is the secret

This control—manufactured by Arens Controls, Inc., Evanston, Illinois—is used for controlling valves on hydraulic dump trucks. A tough job that calls for a tough control and tough wire!

Arens manufactures a wide selection of quality controls used on applications ranging from jet bombers to lawn mowers.

Because of their range of sizes and types, they have streamlined their control production assembly to the point that a completed control can come off the line every few seconds.

Naturally, failure anywhere along the line means costly slow-up of production. That's why they specify Keystone Galvanized MB Spring Wire for their most critical operation — manufacture of the control casing.

Keystone Galvanized MB Spring Wire has consistent uniformity of composition, temper and diameter. It is manufactured by Keystone's unique method of cold drawing after galvanizing to produce a dense, smooth zinc coating free from flaking.

 Keystone Wire can help you, too, assure yourself of steady production. Talk it over with your Keystone representative or call us...today!

> Keystone Steel & Wire Company Peoria 7, Illinois



KEYSTONE WIRE FOR INDUSTRY

MARKETING BRIEFS

Masters, Inc., New York discount house, won a victory when the U.S. Supreme Court refused to hear an appeal brought by General Electric Co. to try to stop interstate sales of fair-traded items at below fair-trade prices (BW-May25'57, p77). Masters is selling the goods through its mail order subsidiary in non-fair trade Washington.

Branch store business gave the nation's department stores a 2% gain in the first half of this year over same period last year, according to the Controllers' Congress of the National Retail Dry Goods Assn. Downtown stores showed a drop.

Fourteen oil companies have been indicted on retail price-fixing charges by a South Bend (Ind.) grand jury. The action stems directly from service station operators' testimony before a House Small Business subcommittee last May. Among the companies indicted were Ohio Oil Co., Socony Mobil, Sun Oil, and Standard Oil Co. (Ind.).

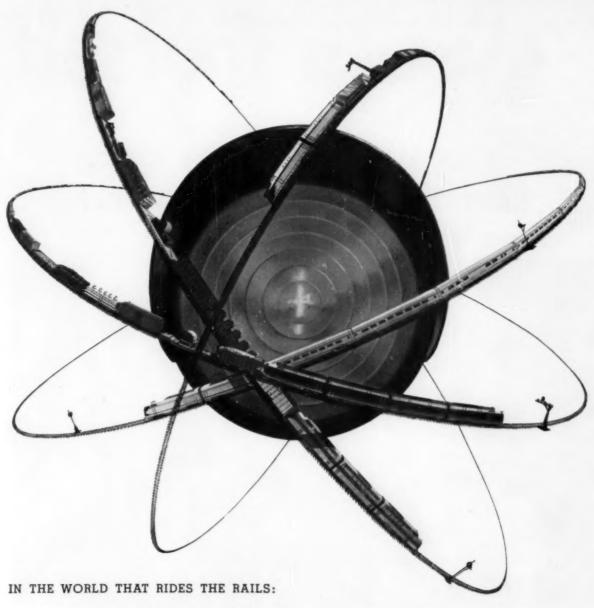
The specialized "General Marketing Dept." has disappeared at Ford's Mercury Div. as a result of the division's merger with the Lincoln Div. GMD replaced the Sales Dept. last year to put emphasis on scientific tools such as marketing research and analysis (BW-Oct.27'56,p47). James J. Nance, new Lincoln & Mercury Div. chief, has restored a more conventional organizational setup.

Butler Bros., Chicago variety store chain, has acquired TG&Y Stores Co., Oklahoma City chain, for more than \$10-million. The purchase will add \$25-million to Butler's annual sales.

Arkansas Louisiana Gas Co., which recently bought Servel's gas air conditioner division (BW-Aug.17'57,p52), has resumed production of the appliances. It has first-year orders for 4,600 units from 50 gas companies, at 20% below old Servel list price.

The moppet market got two new additions this week. With an eye on the headlines, Ideal Toy Corp. is putting a toy "Satellite Launcher" on sale. And Lentheric is out with a set of toiletries for little girls, including bubble bath, dusting powder, and toilet water.

Bissell Carpet Sweeper Co.'s first new product is being test marketed. It is Shampoo Master, a rug cleaning set consisting of an applicator and liquid cleaner. The new product is part of a program to fire up the 80-year-old company.



clear track all the way to the atom!

From yesterday's wood burners to tomorrow's atomic locomotives, what a trail-blazing record of progress. You can see all the signs. Flat cars carry truck trailers "piggy-back." Lightweight, low-slung streamliners whisk you from city to city in record time. Electronic controls let one mainline track do the work of two. Closed-circuit TV helps you get reservations faster. Helping to keep American railroads on the move is where Brake Shoe comes into the picture—with the parts that take the punishment. New type steel wheels for the faster freight cars. Improved bearings and lubricators. Rugged switches and crossovers. Better brake shoes for smoother stops. Spike drivers and snow removal equipment. All built for punishment. All built to

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We want you to judge for yourself, on behalf of your employees, 1. Taste coffee from a regular paper cup. Then taste it from China-Cote.

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- 2. Let both cups stand. Coffee in the China-Cote Cup stays hotter . . . ten degrees hotter in a ten-minute period , . . and the cup stays rigid!

China-Cote wins test after test because of its plastic inner lining. Similar to real china, it prevents penetration of liquid into paper, saves flavor, heat and shape. No wonder executives find their employees' enthusiasm for China-Cote cups is well worth the investigating time! Send for your complimentary cups today!



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Specify Lily China-Cote, the cup that saves the flavor.

U.S. on the Go

Travel men get figures on how many Americans take trips, why they go—and what can draw them.

The travel industry has long thrived on the "mobility" of the U.S. consumer. Now for the first time it has statistics that measure how strong the wanderlust is. It is also getting fresh insights on how to capitalize on the wanderlust. At least one successful enterprise finds that "sun, sex, and sports" are no longer the only lures that pull today's leisure-rich market. Both data and insights came out at the annual meeting of the National Assn. of Travel Organizations in Hot Springs, Ark.

Source of the data is a special U.S. Census Bureau nose-count of tripsters during the first 15 weeks of 1957. Census defined a trip as one, involving at least 200 miles all told, or at least one night spent away from home. The preliminary report indicates that in the period surveyed some 48-million Americans took round trips, averaging 4.3 days each. Visits to friends and relatives accounted for the biggest chunk—21.4-million trips. Business reasons came next, with 13.6-million jaunts.

The car topped all other modes of transportation, with 83% of all trips to its credit. Public transportation with the rails drawing more trippers than the airlines made its best showing on trips of over 500 miles; it claimed 38% of the longer jaunts. Some 45% of the travelers were housewives, children, retired persons.

• History's Lure—The highlight of the meeting was the report of Pres, Kenneth Chorley of Colonial Williamsburg, Inc. He told how the corporation had prospered by stressing the educational aspects of a Williamsburg stay.

The corporation had one strike against it, Chorley explained: The Virginia heat that made summer a dead season. It got around this by promoting its "product" in hotter areas still farther south. Today, August is its best month.

Christmas used to be a slow time, too. A few years ago, the staff began a program to show visitors what a colonial Christmas was. They offered concerts, revived such customs as the yule log ceremony and open house. By mid-May of this year, Williamsburg was booked solid for Christmas.

Operating on a \$7.5-million budget, Williamsburg still has an annual deficit of some \$750,000-mainly because of its educational outlays. But since the restoration started 30 years ago, property value in the town has increased 1,153%, bank deposits 869%. END

FLOUR CITY ORNAMENTAL IRON REPORTS 30% SAVINGS WITH RUBATEX

Scale model view of 11-city-block-long International Arrival Building under construction by The Port of New York Authority in its \$90,000,000 "Terminal City" at New York International Airport. Aluminum window frames (4" x 16" and 8" x 25") on second floor level and in control tower fabricated by The Flour City Ornamental Iron Company of Minneapolis.

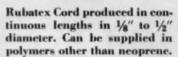


Used as sealing and expansion member in aluminum window frames for International Arrival Building at New York International Airport.



Rubatex Neoprene Cord forms a positive seal in the extruded section of the window frame. G. M. Grady, Vice President and Chief Engineer of Flour City, says "Savings of 30% are realized in this application as compared against calking compound usually used." Rubatex Cord is easily rolled into the groove provided.

Rubatex's uniform size, ability to return to original dimension after extended pressure, plus its closed cellular zero moisture absorption and complete oxidation resistance make it ideal for this unusual window frame application. In addition, Rubatex Cord is used for weather stripping, appliance, instrument and automotive gaskets and drum seals. Rubatex Tubing makes a moisture-proof insulation for cold line tubing.



Rubatex Tubing available in standard inside diameters of 1/4" up to and including 2" with 3/4" and 1/2" wall thickness.



Rubatex Neaprene Tubing is necessary because of the difference in expansion and contraction between the aluminum and steel. Structural blueprint and photo show Rubatex Tubing effectively used as expansion member.



RUBATEX DIVISION, Dept. B-8
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Congressional Focus On Food Marketing



REP. W. PAT JENNINGS (center) tours Washington Street market to see what happens to produce after it reaches city.

House subcommittee takes a first-hand look at New York's produce market (pictures) as it probes distribution practices.

"Our distribution system is the best in the world-but it's too expensive."

That comment by Rep. Harold Cooley (D-N. C.), including an apparent contradiction, set the tone for a new Congressional probe into the country's food marketing prices that may indicate possible ways of curbing rising food prices.

Last week, Rep. Cooley, chairman of the House Agriculture Committee, and five members of a Consumer Study Subcommittee, launched the first of a series of public hearings to find out—if they can—what can be done to lower the price spread between farm and home.

• Trouble Spot—Their first target: New York City's Washington Street fruit and vegetable market (pictures)—through which something like 10% of the nation's farm produce passes to reach the retailer. Committee members, headed by Brooklyn Democrat Victor Anfuso, spent one rainy evening on location, maneuvering between crates of produce, trucks, handcarts, and the throngs of workers. Also present were the buvers



NEW YORK'S Washington Street fruit and



SUBCOMMITTEE MEMBERS Victor Anfuso and Mrs. Coya Knutson talk with Max Fisher, who buys produce for retail.



vegetable market is first target of House Agriculture subcommittee as it digs into the country's food marketing practices.



GRAPES are inspected by Rep. Anfuso during visit to market. Tour preceded hearings on marketing practices.



AT PUBLIC HEARING, produce buyer explains to three consumer representatives why California tomato costs so much in N. Y.



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and commission merchants who nightly set the prices that eventually determine what the housewife pays.

Next day, the committee members convened at the U.S. Custom House to take testimony from consumer representatives, producers, retailers, and marketing experts.

· Conclusion-The conclusion: Wholesale food markets in major cities generally, and in New York particularly, are, in the words of Rep. Cooley, "obsolete, antiquated ratholes . . disgrace to the city and nation."

One observer likened them to the Paris Halles, France's completely centralized food market, described by Herbert Luethy in his book, France Against Itself, as "an archaism, an economic absurdity" that causes "the excessively low prices paid to the French producer and the excessively high prices paid by the French consumer."

· The Background-Actually, it wasn't necessary to hold hearings to determine that a big part-as much as 50%-of the costs that go into food prices in U.S. stores arise from inefficient and excessive handling at wholesale. Cities and merchants-many of whom bypass the markets now by buying direct from the grower-have been well aware of this fact. Philadelphia, for one, is trying to do something about it by moving its market out of the downtown congestion (BW-Jun.15'57,p61).

The public hearings (not without political overtones for the Democrats) apparently were staged by Cooley and Anfuso to drum up support for their bills, now pending in Congress, which would provide long-term government loans at low interest rates so that cities can modernize their wholesale terminals.

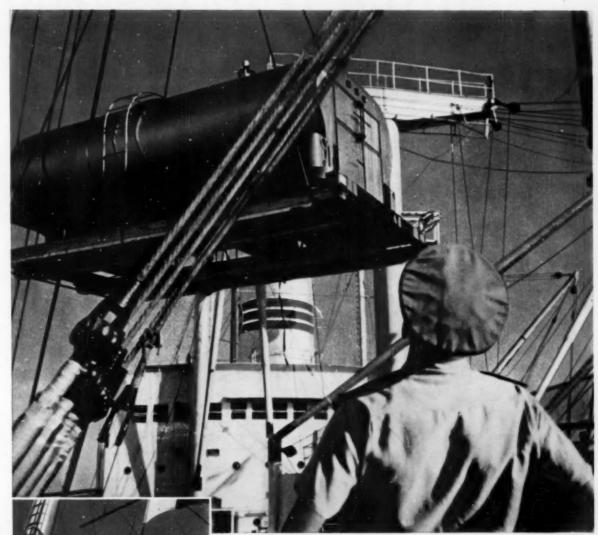
The committee was able to get on the record testimony that lent a lot of credence to Anfuso's contention that consumers were "paying a great deal more for food than they should."

Consumer representatives testified, for instance, that they paid 29¢ for a head of California lettuce. A Salinas (Calif.) grower produced figures showing it cost 14¢ for a head of lettuce to reach the market in New York including the 51¢ he received. The other 15¢ was added after the lettuce reached the

The grower's comment: "We don't want price supports or guarantees, just modern marketing facilities."

· Bigger Spread-The Dept. of Agriculture agreed that poor facilities in New York caused much of the price spread. For the nation as a whole, \$7.8billion of the \$10.7-billion that consumers spent on fruit and vegetables in 1956 was made up by marketing charges, the department estimates.

What's more the spread is getting bigger. END



Photographs by Fritz Henle

How to handle giants like kittens

Moving giant cargo like this to the Caribbean takes experience and skill. A shipment can be big, and still be as tender as a newborn kitten. Alcoa takes such heavy-lift loading problems in stride—has the know-how and teamwork to handle a goliath as carefully as it does a case of eggs. But—regardless of whether your Caribbean shipments are heavy-lift, general or "reefer" cargo—Alcoa

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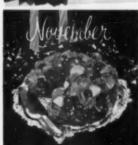












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INTERNATIONAL OUTLOOK

BUSINESS WEEK OCT. 19, 1957



Secy. of State Dulles warned Russia this week that its own territory would not be a sanctuary if Communist forces attack Turkey.

Despite this tough talk, most observers in Washington and Western European capitals do not think war is imminent in the Middle East—or elsewhere. Corroboration for this line of thinking came at midweek when the Syrians placed their whole dispute with Turkey before the U.N. General Assembly. Observers reason that if Khrushchev planned military aggression, he would not first air the whole subject at the U.N.

Syria's action, however, makes sense as a part of the war of nerves Khrushchev is waging. He's using the Soviet Union's lead in missiles as a starting point. Khrushchev's statements, couched in humiliating and provocative language, indicate that he believes he has already turned the tide of psychological warfare against the U.S.

Now Khrushchev is aiming at more tangible results. His minimum targets appear to be:

- Transforming Syria into a Soviet military protectorate. He could do this if Damascus lets the Russians use the Mediterranean port of Latakia as a military and naval base.
- Defeating Western efforts to create a pro-Western Arab bloc. Integral to this effort will be Khrushchev's new try to bring down the pro-Western regimes of Jordan's King Hussein and of Iraq's Nuri.

Khrushchev's long-term aims are even more ambitious. He hopes to force NATO out of its bases in Turkey, Iraq, and Saudi Arabia. Another target is oil. You can expect Russian agents in the Middle East to make a new push for nationalization against the oil companies. These two moves would cripple NATO in the Mediterranean, give Russia control over the Middle East oil exports to Europe.

Meanwhile, Soviet Marshal Zhukov is busy fitting Tito's Yugoslavia into Khrushchev's Middle East game. Observers in the West agree that Tito is abandoning "positive neutralism" and climbing aboard the Moscow bandwagon. Don't be surprised if Tito soon denounces his Balkan Pact with the West's allies, Turkey and Greece—it has been a paper treaty for months.

Yugoslavia's sudden diplomatic recognition of Communist East Germany—which Tito withheld at other times under heavy Moscow pressure—indicates Khrushchev has plans for Germany, too.

Last week's exchange of currency in East Germany, which heavily penalized West Berliners trading with the East Zone, could signal a new Berlin blockade. You can expect other moves by the East German puppet government to try to provoke the West. This time, the Allies would have to deal with a Communist puppet they don't recognize—rather than with the Russians, as they did during the Berlin airlift of 1949-50. Khrushchev could hope, as a minimum, to gain "de facto" recognition for the East German Communists. This would create two internationally recognized German states—undermining the basis of all postwar U.S. policy on Germany.

Paris was chaos and frustration this week. France was without a government. Paris apartment houses and homes were dark and without

INTERNATIONAL OUTLOOK (Continued)

BUSINESS WEEK OCT. 19, 1957

heat because of strikes in electrical and gas utilities. Streets were jammed because a walkout had paralyzed the subway. Even theater employees struck. Meanwhile, Communist demonstrators—protesting the war in Algeria—threatened public order.

At midweek, it seemed possible that the politicians might get together behind conservative Antoine Pinay as head of a new cabinet—out of sheer desperation. Socialists and the Catholic MRP—both of whom have economic policies diametrically opposed to Pinay—might abstain from voting against him. The need for a government and Pinay's privately expressed support for Algerian reforms might win Socialist-MRP toleration.

Britain's economic planners expect capital outlays to drop 9% next year under 1957 levels. They see an end to the three-year investment boom—which had already begun to level off even before the government hiked the interest rate to 7%.

Experts in the City still aren't sure what the cut in plant investment will mean. It could boost exports—or simply result in a general drop in economic activity. Most observers believe the results will be dictated by what happens to world trade, generally (page 126).

American companies have played a big role in the investment boom. The British reckon the growth of American investments (new investment plus ploughed-back profits minus capital withdrawals) at 10.4% annually in all manufacturing. Petroleum has attracted even more American capital. It is booming along at 29.2%-a-year growth rate.

Argentina's powerful trade unions are giving the provisional government a rough time. Labor leaders are calling for an across-the-board wage increase. But the government is standing firm on its anti-inflation program of tying any wage boost to an increase in productivity.

The telephone-telegraph strike, now two months old, is crippling the country. A major test will come next week when both neo-Peronist and "democratic" unions plan to stage a general strike.

In Mexico, Pres. Adolfo Ruiz Cortines is busy choosing a candidate for the ruling Partido Revolucionario Institucional to run in next year's presidential election. Ex-Pres. Lazaro Cardenas, heading the ultra-nationalists, and Miguel Aleman, a big free spender, are throwing their weight around behind the scenes. But insiders say Ruiz Cortines' candidate—soon to be announced—will be a middle-of-the-roader, friendly to U. S. investors, who have put \$750-million into the Mexican economy.

Prime Minister Nehru's visit to Japan this week may finally move some Indo-Japanese economic projects off dead center. An old plan to expand Indian iron ore production for export to Japan in exchange for Japanese capital goods has now been turned over to technicians for discussions. If Nehru's new found enthusiasm for the Japanese doesn't pall, he may be able to push the project through New Delhi red tape and economic nationalism. Japanese credits would be welcomed in India's present foreign exchange bind.



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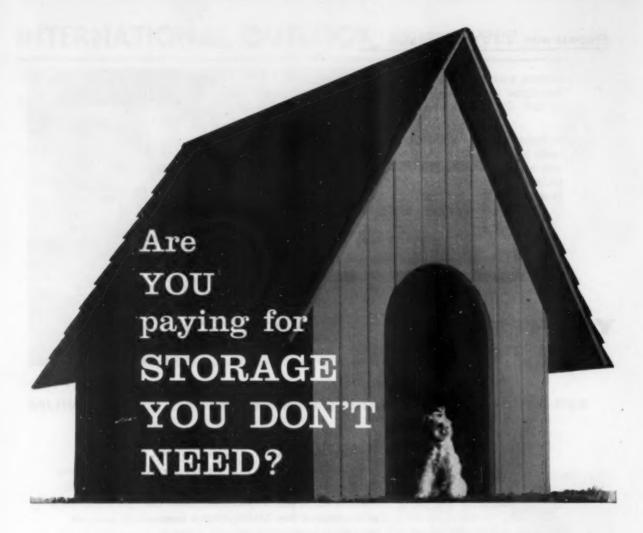
Less heave, more ho! Titanium anchor weighs only 20 pounds, is a pleasure to handle. It's 44% lighter than its equivalent in steel. Note tubular rail stanchions which are among many titanium parts that require no protection or cleaning to fight corrosion.

This sixty-foot beauty represents progressive design with corrosion-resistant titanium. Over 300 pounds of finished parts, including propeller shafts, struts, and bearings under the hull; and stanchions, anchor, anchor davit, and other parts abovedeck were fabricated from Mallory-Sharon commercially pure and alloy titanium.

The yacht, the Mystic VIII, built by Huckins Yacht Corporation, will pioneer new marine uses of titanium and document the metal's unequalled resistance to salt water corrosion. Testing has shown that over a thousand years exposure to salt water would reduce the thickness of a titanium sheet less than one-thousandth of an inch!

Titanium's remarkable corrosion resistance pays off in industry too—for process vessels, piping, heat exchangers, and other equipment exposed to severe environments. Titanium is readily fabricated, and available now for non-defense uses. Contact Maliory-Sharon for application assistance and your production requirements.





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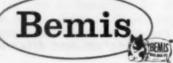


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Auto Layoffs Raise Fewer Howls

This year's "model changeover period" brought scarcely a murmur from union officials, despite the higher number of idled workers in Detroit.

 One reason is that manufacturers did a better job of scheduling than in past years.

A second is that the supplementary unemployment benefits clause in UAW contracts makes long layoffs uneconomic for auto managements.

There seems to be a subtle change taking place in the pattern of Detroit's employment and unemployment cycles. Next week, all the auto makers will be cranking up toward full production of their 1958 models; the "model change-over period" is past—and with scarcely a murmur from state and union officials about the number of people laid off.

This is perhaps without precedent in Detroit. In the past, Michigan's labor-oriented Democratic administration and the United Auto Workers have used the size and duration of the model changeover layoffs as examples of why unemployment compensation and Supplemental Unemployment Benefits should be increased. And this year layoffs generally have been heavy, adding fuel to the fire.

 Fewer Affected—The reason for the placidity is pithily pointed out by the Michigan Employment Security Commission: "The changeover this year will affect fewer workers for a shorter duration than was the case in 1956."

There could be several reasons for this state of affairs. Auto sales remained strong, relatively, through September, and this enabled the manufacturers to do a better scheduling job than in past years. And, there is SUB written into the labor contracts in 1955. One of the reasons UAW wanted SUB was to make long layoffs uneconomic for the manufacturers.

Still, those are manifestations of changes, rather than changes themselves. Like so many things in the auto industry today, the exact nature of what is going on in employment is shadowy. What we see are indications of trends, rather than trends.

I. Jobs and Jobless

The fact that the auto industry's changeover to the new models went smoothly serves to obscure Michigan's real situation: There are fewer manu-

facturing jobs than ever before, and "permanent" unemployment is high.

In May of this year, before any auto plants shut down, state unemployment was 187,000 (104,000 in Detroit). It rose to 199,000 in June (110,000 in Detroit), to 216,000 in July (115,000 in Detroit), to 202,000 in August (116,000 in Detroit), and to 260,000 in September (150,000 in Detroit). That is a slow increase, particularly in Detroit. Last year, at the peak of the changeover in September, statewide unemployment was 259,000 (8.9% of the labor force), and unemployment in Detroit was 175,000 (11.2% of the labor force).

Says an MESC report on Detroit: "The unemployment situation this year is not as improved as the comparison with 1956 data might indicate. The number of persons exhausting benefits rights to unemployment compensation has remained high all year. Furthermore, many of those persons who were laid off last year from plant closings and moveouts have already exhausted their benefits and have little chance of finding steady employment in the present labor market. Quit rates in the area have been very low in the past six months, indicating a lack of job opportunities."

• Overtime Factor—By December, auto production should be just about at peak. But, says MESC, statewide unemployment should be about 155,000, and more than 100,000 of them will be in Detroit. "No significant manufacturing employment increases are anticipated if employers repeat last year's practice of scheduling overtime work to meet production quotas."

The heavy use of overtime unquestionably has been an outgrowth in part of SUB; it is cheaper to schedule occasional long periods of overtime than it is to keep a large work force subject to long layoffs. Partly due to this, partly due to improvement in equipment and methods, Chrysler's employ-

ment has fallen nearly 35,000 in two

• Fewer Dips and Peaks—Those two things—SUB and what is loosely termed "technological improvements"—go handin-hand in reckoning the auto industry's and Detroit's employment. In the past two years, Detroit has made astonishing strides in leveling out auto production and—save for the debacle in the spring of 1956—keeping layoffs to a minimum.

But is this because seasonality has practically vanished from the auto market? Is it because modern tools and machines are so expensive that the manufacturers have bent every effort to keep them operating at a steady, economic level? Is it because SUB has done what the union said it would do—make layoffs too expensive for the factories? You have to be cautious in answering.

II. Does SUB Really Work?

In the first 13 months of its effective life (payments began after June 1, 1956), SUB paid out more than \$7.7-million—about 5% of contributions. Even after these payments, the combined trust funds of General Motors, Ford, and Chrysler amounted to \$137.3-million at the end of July, 1957. By that time, the companies had been putting money into the trust funds for two years; the funds were just about where they figured to be when the contracts were signed in June, 1955.

But that is due to the fact that the companies carefully avoided their greatest liability before it ever arose. Under the SUB plans, the auto manufacturers deposit into trust funds 5¢ for each hour "for which employees shall have received pay from the company." The auto industry cut its employment by more than 100,000 between January and June, 1956. A laid-off worker draws from the SUB funds according to his seniority, the size of the trust fund, and the size of his unemployment compensation—but no worker laid off before May 1, 1956, was eligible for SUB.

Since then, the heaviest drain on any fund most likely was for Chrysler workers in the changeover to 1957 models, extending into several weeks. This year, Lincoln had a long layoff, between one and two weeks. In many cases this would mean only one week's SUBenefit, because the first week of layoff in any one year is the "waiting week" for which no benefit is paid.

• No Strain on SUB-There has been heavy unemployment among defense workers in the Detroit area-a drop

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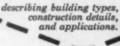
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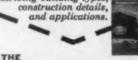
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from 199,000 in 1953 to 61,000 in 1956-but this has not cut into the main SUB trust funds because separate funds for defense workers were established

What it adds up to is that-for whatever reason you care to ascribe-the auto layoffs have not strained the SUB funds. There's a point of additional interest here. The SUB plan, important as it may have been in stabilizing auto employment, has had no bearing at all on the course of general manufacturing employment in Detroit.

III. The Outlook

At the time a guaranteed annual wage (which emerged as SUB) was being debated in industry-labor circles, one of the persistent criticisms of it was that it would force end-product manufacturers to pull back into their own plants work generally done by suppliers; they would have to keep their own workers busy to avoid SUB liability, and supply fams would die. Actually, the core of Michigan's permanent unemployment are former workers of supply firms-many of whose customers took the work into their own plantsbut SUB had nothing to do with it.

The "problem" jobless worked at plants such as Kaiser-Fraser (which merged with Willys and moved to Toledo), Murray Body (its customers took the body-building into their own hands long before SUB), Packard (which was moved to South Bend and greatly shrunk), Hudson (which was merged into American Motors and moved to Wisconsin), Motor Products (which lost its parts business partly to its customers, partly to competitors), and other smaller firms.

· "Seniors" Hurt-Today, a special report by MESC to Michigan's Gov. G. Mennen Williams estimates "perhaps as many as 35,000 of the 77,000 workers idled by plant shutdowns have not vet obtained permanent employment." And, it is unlikely that they will. Most of them are past 45 years old, many past 50. Employment of "senior" workers now is getting the attention from the state and UAW that the changeover layoffs once got. UAW probably will try again next year to get written into its contracts a provision for area-wide hiring preference of laidoff workers according to their seniority. · Transition-On balance, the change apparently coming in Michigan employment shapes up like this: steady work with few layoffs in the auto industry for a much smaller work force than the industry once knew; a consistent increase in nonmanufacturing jobs. And, this creates its own headaches, the major one of which is: How do you persuade, or re-train, auto workers for

nonmanufacturing jobs? END



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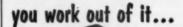
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Kohler Decision

NLRB examiner finds company guilty of unfair acts. But the verdict is being appealed to the full board.

A trial examiner for the National Labor Relations Board ruled last week that the Kohler Co., Kohler, Wis., was guilty of unfair labor practices in its relations with the striking United Auto Workers. However, the long involved legal fight between the company and union is still far from over.

In a 150-page decision, George A. Downing, a veteran NLRB trial examiner, ruled that the Kohler Co. was within its rights when it fired 13 striking unionists for directing mass picketing of its plant, in violation of the Taft-Hartley Act, and when it discharged 30 others for serious strike disorders.

But, Downing said, at least 35 workers were dropped in violation of T-H for strike activities, and all except two should have their job rights restored.

• Specific Findings—Under T-H, an employer may dismiss strikers during an economic strike, but not during one over alleged unfair labor practices. According to Downing, these actions by Kohler changed the strike from an economic dispute to one over unfair labor practices after June 1, 1954:

• The company granted two wage increases unilaterally, the first on June 1, 1954, the other on Aug. 5, 1955.

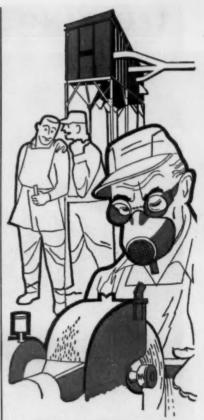
• It discharged 53 strikers from its shell department on July 1, 1954.

 And, according to Downing, Kohler refused to bargain with UAW about this dismissal and discharges of 90 other strikers on Mar. 1, 1955.

Downing ordered the company to reinstate all strikers whose jobs hadn't been filled before June 1, 1954, and who retain employment rights, on application or when the UAW walkout ends. If necessary, he said, the company should discharge employees hired since that date.

The decision was based on 115 days of hearings which produced 19,700 pages of testimony and 1,200 exhibits. There will be many more before the case is finally settled.

• Not Final—Kohler has already announced that it will file "exceptions" to parts of the decision that are "adverse to us." This will place the case, on appeal, before the entire five-man NLRB, which will require six months, at least, to hand down its decision. After that, an appeal to the federal courts is certain—a matter of another year to a year and a half. END



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NLRB Seeks Broader Powers

With a former South Dakota Supreme Court justice at its helm, NLRB has been running like a judicial body.

THE ELECTION of James Riddle Hoffa as president of the 1.5-million-member International Brotherhood of Teamsters has built up more steam for legislative controls over unions. In the next session of Congress, new curbs on organized labor may be adopted, and this possibility again raises questions about the National Labor Relations Board's role in labor relations.

Already the NLRB's chairman, Boyd

Already the NLRB's chairman, Boyd Leedom (picture), has testified before Congress on the board's lack of authority to cope with corruption and racketeering within unions. The Taft-Hartley Act simply doesn't provide the tools necessary for the job—although it does contain what few tools there are.

As head of the agency whose sole job is to interpret and enforce T-H, Leedom spoke out recently on the limits to the board's power. "The board has no criminal or restraint of trade jurisdiction; it has no power to deal with corruption inside a labor organization," he reminded the Missouri Bar Assn.

Safeguards—However, under T-H, the board does provide some protection for employees who are victims of

corrupt labor-management practices:

• The board can quash so-called "sweetheart agreements," where a union and management have come to terms without the approval of a majority of the employees.

 A union cannot discriminate against an employee or force management to do so, except for nonpayment of dues.

 NLRB elections call for use of the secret ballot. This allows employees free choice in picking collective bargaining agents, as well as freedom to reject collective bargaining representation.

Taft-Hartley also forbids payments from management to union representatives. However, NLRB doesn't police this clause. The law provides for a criminal penalty, and enforcement is entrusted to the Justice Dept.

• Flaws—According to Leedom, the board's major weakness is that it cannot initiate proceedings. A union, employer, or employee must request remedial action before NLRB can intervene. Furthermore, the ultimate penalty that the board can impose is a ruling that a union can't use the board's processes or be officially certified as bargaining agent.

Some unions, such as the United Mine Workers, have gotten along fine



BOYD LEEDOM, the NLRB chairman, has complained to Congress of board's limitations.

without NLRB certification, however. The UMW has thrived without the board's blessing since T-H was passed 10 years ago. But what has been true for the Mine Workers might not be true, say, for the Teamsters.

If Congress does enact controls

If Congress does enact controls over unions during its next term, it's likely that they may expand the area in which NLRB can intervene and strengthen the punishments the board can order for the recalcitrant.

 Money Wanted—But it's also clear that, at the moment, NLRB members are reluctant to tackle any major cleanup job. Under its present setup, with hardly enough money or manpower to hold its own, the labor relations agency would be swamped by additional duties.

Leedom made an unfruitful appeal to the last Congress for more funds just so that the NLRB could handle its current cases. Under the board's former chairman, Guy Farmer, it tried to cut down the growing backlog by adopting a series of restrictions on interstate commerce cases it would handle. Then the Supreme Court held that states could not take over cases rejected by the NLRB. This left hundreds of cases—estimates vary up to 25% of all those coming before the board—in a "no man's land" where employers, unions, and employees are without legal remedy. These "cases without a country" have caused the most recent attacks on NLRB, especially from the unions.

Now, under Leedom, NLRB is revamping its rules. Board members rejected a plan to take cases on the basis of the number of employees involved. Tentatively, the present scheme is to trim financial qualifications so that more small companies can qualify.

This is the only policy question to be



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• Quietly at Work—For the past year, NLRB has worked almost unobtrusively—a reflection of the man who heads it. Leedom was appointed to the board in 1955 by Pres. Eisenhower. Before that, he was a justice of the South Dakota Supreme Court, and his associates still call him "Judge." Admittedly, he had little experience in labor relations.

The 51-year-old jurist tells a joke on himself about that lack of experience. The story goes that he was asked what he thought about the Taft-Hartley bill. He replied: "I think they ought to pay it." But, he adds quickly, this is just a story.

Leedom's past lack of labor relations knowhow can be discounted now. In his two years on the board, he has worked on thousands of labor cases—probably more in the same time spanthan any predecessor. One reason for this is Leedom's interest in speeding the handling of cases. He set up a system of three-man panels to make decisions in all but the most important cases coming before the board for review. His aides estimate that this has shortened the time it takes to reach a decision by one-third.

• Courtroom Atmosphere—The most apparent change in the board's practices is the judicial approach Leedom contributes. Less prone to lengthy discussion, the board now operates more like a court—the law is there, and decisions are made from it.

Critics argue that the board under Leedom avoids the reflective, analytical study required in labor-management cases. They say there is less pattern to its decisions than there used to be. Leedom's approach, however, may be more a product of the times—T-H is 10 years old now and a working law.

Under Eisenhower's first chairman, Guy Farmer, the NLRB admittedly made much new policy, including its controversial rulings limiting its jurisdiction and extending employers' free speech rights. The board did this when Republicans gained the majority. They wanted to alter some of the rulings and practices of the previous board, which had a Democratic majority.

Leedom's board seeks no about-faces in policy. Now manned by four Eisenhower appointees—Leedom, Philip Ray Rodgers, Stephen S. Bean, and Joseph A. Jenkins—it still has one holdover in Abe Murdock. Murdock, whose term expires in December, has been on the board since T-H was passed. He is the most frequent dissenter.

 Dakota Expatriate—Unlike Farmer, who resigned the chairmanship after two years, Leedom says he's on the job "until they fire me." He sold his South Dakota home and now lives in

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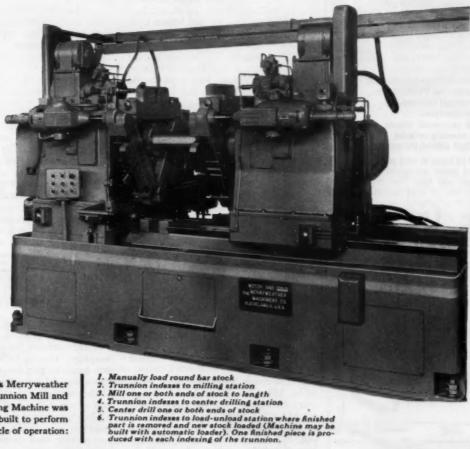
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Washington with his family, including three children.

The soft-spoken judge runs his office on a well-ordered schedule. His workday is from 8:30 to 5. He takes a briefcase full of cases home for evening reading. He has neither the time nor the inclination for hobbies, he says.

Being chairman of the NLRB offers much less authority than a similar job in other federal agencies. Leedom has only one vote out of five, and he often finds himself among the minority.

However, the chairman's job does

have administrative responsibilities. He's the board's principal contact with Congress, since it's the chairman's job to testify before committees. His \$20,-500 salary is \$500 more than the other members earn.

Leedom sometimes bridles at criticism leveled at the board. He objects to "pro-management" or "pro-union" labels, tries to keep the board operating as much as possible like a judicial body. So far, this has worked—but Congress may change all this when it starts legislating this winter.

Hoffa Trips Over a Hurdle

Federal judge delays his taking over as president of Teamsters. Until he does take office, AFL-CIO can't use him as lever to push out his union.

It may turn out to be a Pyrrhic victory for the foes of James R. Hoffa but, officially, at midweek, he still was not president of the International Brotherhood of Teamsters.

The beleaguered Hoffa was due to take office on Tuesday as president of the 1.5-million member union, succeeding Dave Beck. But the day before, U. S. District Court Judge Dickinson Letts restrained Hoffa from being sworn in pending a hearing on whether he was legally elected at the Teamsters recent Miami convention. His term would normally begin Dec. 1, but Hoffa had planned to take over this week, with Beck taking a leave of absence.

• Effect of Delay—Until Hoffa moves into office, the showdown between the Teamsters and AFL-CIO may be delayed. The federation's present schedule calls for an Executive Council meeting on Oct. 24 to vote on whether to suspend the trucking union.

If the court's restraining hand is still on Hoffa on Oct. 24, the council probably will hold up action. It can't suspend a Hoffa-run Teamsters if he can't take office. There's still time for action before the AFL-CIO convention in December.

• Probation—Although the Teamsters are developing support within the council for their cause—a vote for a long probationary period to allow Hoffa a chance to clean up—there's little chance they can raise the 10 votes that would prevent the two-thirds majority needed for suspension.

A head count of the 29-member council by AFL-CIO aides indicates enough votes to support the recommendation of AFL-CIO Pres. George Meany—if he wants suspension. One union source puts the situation this way: "Do the council members vote for Jimmy Hoffa or for George Meany?"

· Legal Hurdles-While the pressures

of the AFL-CIO haven't blocked the fast-moving Hoffa, the courts have halted his ascent to the Teamsters throne, at least momentarily. And they might keep him off it for some time.

Hoffa faces legal troubles on three fronts:

 Judge Letts' decision to keep Hoffa from taking office requires a formal hearing next week to make it permanent pending a decision on whether the convention was legally assembled.

• In New York, Federal Judge William B. Herlands granted Hoffa breathing time. He postponed the wiretapping trial to consider a claim by Hoffa's lawyer that a fair trial cannot be held in the near future. The judge said he would set a date on Oct. 25 for the trial. Hoffa is accused of tapping the phones of Detroit aides who had been called to testify before the McClellan committee.

 At the same time, Hoffa pleaded innocent to charges that he lied to a grand jury about wire tapping. A trial date in this case will also be set Oct.
 Specifically, he is accused of falsely testifying about his relations with Johnny (Dio) Dioguardi, convicted extortionist, and Hoffa's fellow defendant, private investigator Bernard Spindel

Congressional Moves—McClellan investigators are pressing their search of Teamsters records for their anti-Hoffa campaign. They've called on all Teamsters locals to give details on how their convention delegates were selected. McClellan himself has indicated that he feels it was a "stacked" convention.
 There's a chance the committee may

There's a chance the committee may funnel its information to the 13 Teamsters making their election challenge in Judge Letts' court. In any case, both are emotionally joined in the effort to keep Hoffa from taking office. END



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TRANSMISSION

In Labor

NMU Chief Suggests AFL-CIO Seek To Bring Longshoremen Back Into Fold

National Maritime Union Pres. Joseph Curran last week suggested that AFL-CIO work out plans to bring the International Longshoremen's Assn. back into the House of Labor. ILA was expelled from the former AFL in 1953 on charges that it was dominated by criminals and racketeers.

Delegates to an NMU convention in New York voted to authorize union officers to work with ILA to help

longshoremen re-enter AFL-CIO.

The sharply worded resolution was critical of AFL-CIO Pres. George Meany but aimed more at Paul Hall, president of the rival Seafarers' International Union. NMU accused Hall of being chiefly responsible for the expulsion of the dockers without AFL's having taken appropriate steps to clean up ILA and protect the long-shoremen.

Hall and Curran are engaged in a jurisdictional fight for control of hiring by the American Coal Shipping Co. (BW-Aug.17'57,p142). Hall called the NMU resolution a "further indication of Curran's complete irre-

sponsibility."

Curran is a member of the AFL-CIO Ethical Practices Committee so the resolution is expected to produce some rumblings within the high councils of the federation.

Showdown on "Hot Cargo" Clauses Seen As Supreme Court Accepts Three Cases

The U.S. Supreme Court this week agreed to hear three cases that promise a showdown on the legality of "hot cargo" clauses and union efforts to enforce them (BW-Oct.5'57,p155). At the same time, the high court agreed to hear two other major labor cases and denied a hearing in one.

 Hot cargo—At issue is the National Labor Relations Board's position that hot cargo clauses are legal and may be enforced—up to a point. NLRB holds that a union commits an illegal secondary boycott if it appeals directly

to workers to abide by the contract clause.

 No-solicitation rule—The high court granted NLRB an appeal in a case against Avondale Mills, Inc. A lower court reversed an NLRB ruling that the company violated Taft-Hartley by enforcing a "no-solicitation" rule during working hours against the Textile Workers Union of America while company supervisors were campaigning against the union.

 Racket investigation—The court agreed to review the contempt of court conviction of an employer called before a New York State grand jury investigating bribery of union representatives. The issue is whether the Fifth Amendment protected the employer from contempt for refusing to answer questions, which might have provided the basis for prosecution under Taft-Hartley provisions.

 Arbitration of new contracts—The court rejected a request by the Boston printing pressmen's union to review a lower court's ruling that federal courts have no jurisdiction under Taft-Hartley to enforce agreements to arbitrate differences that arise in negotiating terms of a new contract.

McClellan Group Calls Management Men To Quiz on Consultant-Pal of Beck

Seventy-five management witnesses from across the country—a third of them from Chicago—have been subpoenaed to testify before the Senate Select Committee when it probes into the activities of Nathan W.

Shefferman, a management consultant.

Shefferman, who runs Labor Relations Associates of Chicago, is a close friend of Dave Beck, the Teamsters retiring president. Earlier committee hearings disclosed business dealings between the consultant for 300 companies and the union official.

AFL-CIO Publicity Chief Quits As Economy Ax Hits Radio Programs

Philip Pearl, head publicist for the old AFL for 18 years, resigned last week as director of the AFL-CIO Public Relations Dept., an assignment he had held since

the merger two years ago.

Pearl announced his resignation after the federation high command decided to drop two nightly radio news programs, effective at the end of 1957. Pearl had served as adviser on the programs. He plans to set up his own publicity service in Washington with unions as clients.

The radio programs, which cost \$800,000 a year, were dropped in a federation retrenchment move. AFL-CIO has been pinched financially for some time, largely because of manpower and budget problems caused by the merger in 1955. Now it is faced with the very real possibility that a tenth of its per capita income will be cut off by suspension or expulsion of the Teamsters.

Pennsylvania's UC Board Upholds Award To Westinghouse Workers; Appeal Planned

Pennsylvania's Unemployment Compensation Board of Review in a 2-1 decision last week ruled that Westinghouse Electric Corp.'s refusal to accept arbitration, as proposed by the governor, converted a strike into a lockout. As a result, the board said, some 33,000 Westinghouse workers are entitled to unemployment compensation for the period in 1956 following the refusal. Westinghouse announced that it would appeal to the Pennsylvania Superior court.





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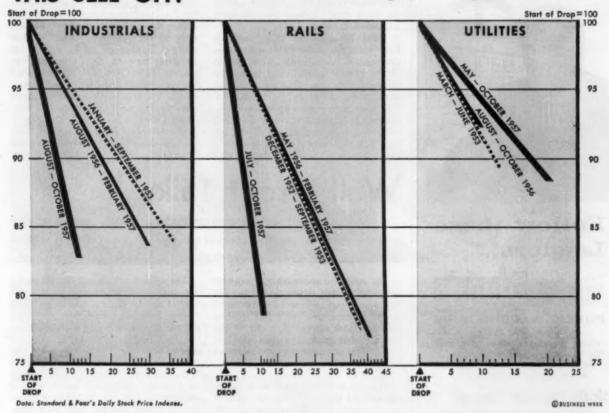


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THIS SELL OFF: It's the most damaging major down swing since 1949



Still Not in Shape for a Climb

Despite the depths of the recent decline, the stock market doesn't seem to have found bottom. Prices and yields are not so alluring as they were in the 1953 dip.

N MORE AND MORE quarters of Wall Street, the reaction to what you see in the charts above has been running something like this:

"Sure, it's hurt a bit. But don't get too upset over what has been happening lately in the market. In the longer scheme of things, the selloff in progress since mid-July is a blessing in disguise.

"Remember the sharp January-September, 1953, decline? That was once similarly alarming. What you are now seeing is merely history repeating itself. Just as proved the case then, the recent price weakness—though it has its painful side—is merely providing the market with just what it has been needing for some time: a solid base from which to launch another strong advance.

"It won't be long before the latter gets under way, either. And it's destined to touch off just as glittering a string of historic new highs as those chalked up following the market's severe 1953 drop."

There's nothing tongue-in-cheek about this view. A surpising number of Streeters still aren't sure that the bull market dating back to mid-1949 has run its course. They stick stubbornly to a belief that recent events, however painful to investors and traders, are just one of those pauses that eventually refreshes—such as occurred in 1953.

• Discord—To many others in Wall Street, though, this thesis is just whistling past the graveyard. Indeed, they won't even bother to discuss it. The "middle-roaders" are more kindly, but most of them don't go along either. As they see it, their colleagues are

bullish far too soon. True, the recent sell-off has been the most extensive Big Board downswing since mid-1949. Still, they claim, the market has a long way to go before it reaches as attractive a technical base for advance as it did at the bottom of the long 1953 decline.

This opinion finds support in a study of the "benefits" emerging from the two price breaks in question. Using Standard & Poor's statistics, for example, just consider the industrial section of the Big Board stock list:

To be sure, earnings of the industrials have risen about one-third since September, 1953. But prices stand some 96% higher, despite the damage of recent weeks. As a result, industrial issues recently were selling close to 13.5 times earnings—compared with a bit under 8.6 times earnings four years ago.

From the point of view of yields, the industrials aren't any better off in comparison with 1953. Of course, dividends have generally risen since



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AMERICAN WAREHOUSEMEN'S ASSOCIATION

Merchandise Division 222 West Adams Street • Chicago 6, Illinois then—in many individual cases, quite sharply. However, because of the general price rise in stocks since 1953, the industrial shares still yield only a little more than 4.3% currently, against the 6.2% return offered by such issues back in September, 1953.

• Bond Rivalry—And that's not all. Four years ago, stock yields suffered no competition from bonds. Now, thanks to the money squeeze, high-grade corporate bonds pay 4.12%, compared with only 3.25% in 1953; short-tolong-term governments upwards of 4%, against a maximum under 3%; and tax-exempts as much as 3.77%, vs. only 2.92%. What's more, new offerings of high-grade bonds have lately

been offering investors yields of 4.75% or better.

Of course, this is only the over-all picture. Obviously, it doesn't speak for all individual industrial shares in a market that has been extremely selective for a long time. However, there are two sides to the selectivity coin. Technically, a number of stocks may be as attractive now as they were in September, 1953. But that certainly isn't true of most of the better-grade issues, which, up to recently, were the main buying target of investors. Despite heavy selling in many such issues since midsummer, on balance they are considerably less alluring—both in price and in yield—than they were four years ago.

Wall Street Talks . . .

... about shrinking margin equities ... pains of the pro investors ... money market doings ... Deep South school bond woes ... worries over the rally in missile, aircraft stocks.

The equity in many margin accounts has been getting rather thin. One Big Board firm—not an especially large one—is said to have sent out 1,500 separate calls for more margin after one of the bad days last week, and then sold out 150 margin accounts the next morning in self defense.

The pro investors have been suffering too: (1) the per-share asset value of one open-end fund this week was 14½% below the midyear figure; (2) a Canadian fund has dropped almost 20% since May 31; (3) in the third quarter, there was a 31% slide in the unrealized appreciation of the securities held by a "private" open end fund.

Money market notes: On Monday, the Treasury bill rate jumped from last week's 3.52% to 3.66%-a borrowing cost that in many years has been exceeded only once, by the 4.26% the Treasury had to pay for an offering during the 1933 bank holiday...Bond buyers have become more cautious. But Streeters aren't worried, arguing that all signs point to higher prices over the longer term, while their inventories remain light. However, they do feel that the prices of municipals may have risen too high too soon; and they expect to be flooded soon with new corporate and tax-exempt offerings. So, they won't be surprised by further "hesitant" markets.

Little Rock's school integration problems have had repercussions in the Street. Dealers in municipals say that investor interest in most Deep South school bonds has been greatly dampened.

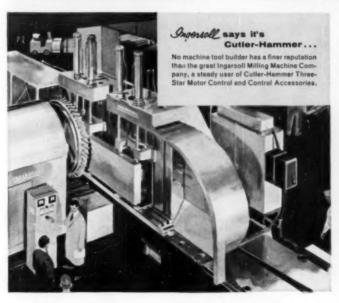
The rally of missile and aircraft stocks has made some Street conservatives uneasy. They say there is too much blind buying, based on such beliefs as: "After all, who could be hurt with prices now so far below bull market highs, especially since it's a foregone conclusion that public opinion and politics will soon force Washington to dump its economy moves and spend billions on satellites and missiles." The worriers say that the picture just isn't that clear, and that nobody knows who would get the huge new orders if they did materialize. Thus they hear that the 'California crowd" is demanding and getting increased consideration for local companies that were made "marginal" by the Air Force's recent cuts and stretch-outs of orders.

The get-rich-quickers are still operating. New York's Atty. Gen. Louis J. Lefkowitz says that shady Canadian stock promoters are circulating their come-ons so widely that even the members of his own staff are on the mailing lists.

Market letter gleanings: "The market has passed into the domain of the psychological where sober analysis is at a discount." (A. M. Kidder & Co.) . . . "Washington . . [and] . . industry . . . [now hold] . . the key to a change in speculative psychology." (Josepthal & Co.) . . "It may be too early to be bullish but it is probably too late to be bearish." (E. F. Hutton & Co.) . . . "Improved stock prices are a good possibility" but "they should be used for weeding out rather than enlarging commitments." (Vanden Broeck & Co.)

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The difference is C-A design. Cooper Alloy has designed this type of valve specially for stainless steel. The result: new ease of maintenance with minimum downtime. Now—from easily operated handwheel, to long-life ball and socket rotating discs—these valves have proven superior in every way.

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Cooper Alloy Stainless Steel Gate Valves
—"You can tell them as far as you can
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stainless steel.

PERSONAL BUSINESS

BUSINESS WEEK OCT. 19, 1957



If you're in the position of many a Wall Street investor these days—holding cash and waiting out the market—you may be wrestling with the problem of selecting some short-term outlets for your money.

The current tightness in money gives you a wide choice of opportunities providing high yields for short-term use of your money. But some short-term investments will tie up your cash for definite periods. Others are very liquid, can be turned back into cash almost immediately. Normally, the more liquid the investment, the lower the yield.

Your best bet, obviously, is to get a line on as many choices as you can, including some not-so-obvious ones. Here's a rundown on some short-term investments available, showing current yields and degree of liquidity:

Bank accounts. Good interest rates are offered by banks—but to get them, you have to keep your money on deposit for specific periods. For example, savings banks pay up to 3¼% for accounts, but to get this rate, most require a six months' deposit. (In New York, however, most savings banks compound interest quarterly.) This may hamper your short-term operations, because you lose your interest if you withdraw your funds before the stated period. Banks also limit the amount of deposits they will pay interest on—a man and wife can hold \$40,000, with \$10,000 each in individual deposits and \$20,000 in a joint account. However, you can maintain balances at various banks.

Commercial banks are permitted to pay 3% on saving deposits kept in the bank three months. Some banks do not regularly offer these ceiling rates. But if you have a lot of money available, they usually are willing to negotiate. They, too, have a maximum limit—\$25,000 for an individual account, \$75,000 for a man and wife.

Savings and loan associations. Quarterly dividends ranging from 3% to over 4% (mostly in the South and West) are paid on the shares you buy. But as you are a shareholder rather than a depositor, S&L associations can require written notice before you can cash in your shares. There is no legal limit on how much you can put in S&L outlets, but in practice most accounts do not go above \$10,000.

U.S. government market. A number of short-term Treasury obligations bear good interest rates and offer a high degree of liquidity. They can be bought through your bank or broker. Commissions are relatively small—banks that maintain a market in governments make no charge to regular accounts; brokers charge 1/64 of 1% of purchase price.

Treasury bills. Bills that mature in 91 days are issued weekly in \$1,000 denominations and higher, and are sold at a discount. Last week, the average cost on a \$10,000 bill was \$9,907, which provides a return of about 3.7%. Treasury bills are considered the nearest thing to money, and are actively traded, so that you can sell before maturity—at a slight loss of interest.

Treasury certificates. These come in \$1,000 units with maturities as long as a year, which roughly jibe with federal tax dates. Current issue, due next Mar. 24 (running 264 days), yields about 4%; all certificates are readily marketable and offer a high degree of liquidity.

Treasury notes. Maturities run from just over a year to five years, and currently are yielding nearly 4%. Marketability is good.

Commercial paper. These are short-term obligations—running from 30 days to six months—issued by both blue-chip corporations and large finance companies. Current rate on corporate paper is 41/8% for four-to-six month paper; rates on finance company paper go from 33/4% for three months to 41/8% for six months. You can buy and sell commercial paper

PERSONAL BUSINESS (Continued)

BUSINESS WEEK OCT. 19, 1957 through your brokers; on regular accounts they normally charge no commission, only a small handling fee.

Commercial paper is rarely offered in less than \$25,000 amounts and is not so marketable as government issues.

Instrumentalities. These are obligations issued by government agencies. Denominations and maturities vary, but a good many fall due within a relatively short period. For example, Federal National Mortgage Assn. ("Fanny Mae") \$1,000 notes that fall due in January, 1958, can be bought at a discount to yield over 4% to maturity. Bank for Cooperatives notes come in \$1,000 units, fall due in March, 1958, and pay 4½%.

But these high rates signify that liquidity is not on a par with Treasury issues. If you want to sell them before maturity, you'll find that the yields will be considerably reduced.

Brokers' accounts. If you have a long-standing account with a stock broker, you can negotiate with him to pay interest on your uncommitted funds. Brokers do not like doing this, but tight money conditions and the drop in stock market prices have made them more receptive.

The stock exchange has laid down rules on interest payments. The funds in the account must be reinvested—either in stocks or bonds—within a definite period—usually three months, but no longer than six months. The amount of interest must be at least one-half of 1% below the rate that brokers have to pay for loans—currently 4½%.

In practice, brokers rarely pay more than 3%—and usually less. Generally, interest is paid only on the accounts of good customers with sizable uncommitted funds. (Interest is paid either after reinvestment of funds or at the end of three months; but if you do not invest your funds by the end of six months, interest is discontinued.)

For the home craftsman: If you're looking for a special piece of exotic wood for your current workshop project, you can get a new catalog (25¢) listing many exotic strains from "avodire" to "zebra" in solid wood, plywood, or veneer. . . . And if you care to examine the actual texture, grain, and character of a certain wood—you can get a sample package of 50 different varieties (including aspen, ebony, kelobra, prima vera, and satinwood) that come from the U.S., France, Africa, India, Japan, and South America. Both of these items are available from Albert Constantine & Son, Inc., 2050 Eastchester Road, New York, N. Y.

If you're planning a late fall (or even early spring) campaign of lawn care, you can get a new self-propelled riding unit, with its own 2½-hp. engine, to push or pull many kinds of lawn maintenance equipment—aerator, snow plow, reel or rotary power mower, roller, spreader, or seeder. The Lawn-Boy "Loafer" is lightweight, compact, and can be stored vertically. Cost is about \$170; from Lawn-Boy, Lamar, Mo.

A new prescription product is said to give the cardiac patient "two-level" therapy—physical and mental. On the assumption that emotional tension goes hand-in-hand with heart trouble, a pharmaceutical firm has combined a drug that relaxes the walls of heart arteries (PETN), with a tranquilizer (atarax). The product, "Cartrax"—taken in tablet form—will not replace nitroglycerin in case of acute attack, says its maker, J. B. Roerig & Co., but it will help prevent heart attacks.



A specially "engineered" nylon fabric for combining with butyl rubber was developed by Wellington Sears for the Carlisle Tire & Rubber Div., Carlisle, Pa. Wellington Sears supplied only the base fabric—not the finished piping. With a new kind of pipe hauling water for them, farm owners may soon have irrigation usually considered way beyond their reach. Made of a specially woven nylon fabric in combination with butyl rubber, this pipe eliminates much of the cost of equipment, ditching, and other ordinary details, and provides an easily assembled, easily knocked down water carrier. It is durable, water tight, resists erosion and eliminates water losses due to seepage and evaporation. It costs less, carries more. And it can be moved easily from place to place: a 50-foot link weighs approximately 50 pounds.

Whether it works on the farm or in the factory, fabric is doing a bigger and bigger job these days. The nylon used in this irrigation system is just one of the many fabrics made for industry by the mills of West Point Manufacturing Company, and supplied by Wellington Sears. It represents over a century of experience in industrial textiles of all kinds, a record of service which means problem-solving help for you, on call. Just let us know. For informative booklet, "Fabrics Plus," write Dept. C-10-19.

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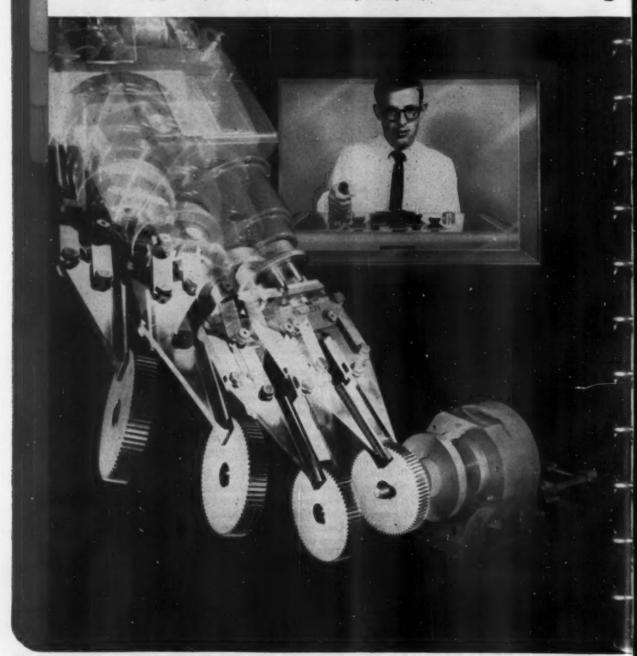


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of standard handling equipment—has the know-how to design and build special equipment for unusual situations. • Mechanical Division, Minnespolis.

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Soybean Division, Minneapolis.



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Westinghouse

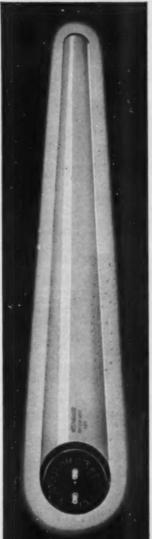
JOB-TAILORED FLUORESCENT LAMPS MEET YOUR LIGHTING NEEDS

...all with ULTRALUMETH High-Intensity Phosphors • MORE LUMENS PER WATT...
more light for your dollar • UNIFORM END-TO END LIGHT • PERFECT COLOR
MATCH...ALWAYS • MAXIMUM OUTPUT MAINTAINED THROUGHOUT LONG LIFE

New SUPER-HI Fluorescent lamps produce more than twice the light per foot. Designed primarily for high bay (20 feet or higher) industrial and outdoor lighting, a new line of extra high light output fluorescent lamps produce more than twice as much light output per foot as standard fluorescent lamps. The new SUPER-HI lamps permit extremely high energy loading of electrodes, the arc stream and the phosphor. This gives you high light output with new economy at good efficiency and long life. SUPER-HI lamps are light in weight, convenient to handle and provide a light source subject to the same easy optical control as with present standard T12 lamps, but with over twice the light output. Available in 105, 155, and 205 watts, 4, 6 and 8 ft. The lamps have a rated average useful life of 5000 hours, deliver 6000 to 13,000 initial lumens.

High Output Rapid Start lamps give more than 50% more light than regular type. Designed primarily of for medium-high bay (15 to 20 feet) industrial and outdoor lighting, four new sizes of Westinghouse high output, rapid start fluorescent lamps can produce over 50% more light than comparable sizes of regular lamps and offer new economy and effectiveness to fluorescent lighting. These lamps provide increased lighting levels, make installations with adequate footcandle values of deluxe color light more practical, and improve the economy and practicability of fluorescent lighting at higher mountings and at lower ambient temperatures.

These lamps are available in 24, 48, 72 and 96 T12 design for general indoor use and for outdoor service where retention of light output at low temperatures is essential. The 72 T12 is recommended for street lighting.



Reflector-Fluorescent lamps produce 60% more directed light. For use where external reflectors are difficult or impractical to use, or where dirt deposit cuts lighting effectiveness, these Westinghouse Reflector-Fluorescent lamps provide a directional light distribution which helps put the light where you want it. This is accomplished by a built-in reflecting surface, extending the length of the lamp on the inside of the tube. which redirects about 60% extra light out the other side. Westinghouse Reflector-Fluorescent lamps are recommended for use in coves, showcases and other locations where space is limited. Indirect lighting effects may also be obtained by aiming the lamps toward the ceiling.

They also solve special lighting problems including temporary lighting for construction projects, displays, and exhibits.

Westinghouse Reflector-Fluorescent lamps are available in 40 watt rapid start, 48" and 96" T12 slimline types.

Beauty Tone Home-line Fluorescent lamps with warm white deluxe color. The same new Westinghouse "Beauty Tone Home-line" lamps which are revolutionizing home lighting by providing warm white deluxe illumination are also ideal for offices, stores and wherever "friendly" color of light is wanted to flatter complexion, enhance the natural color of furnishings, decorations, and displays, and blend well with incandescent lighting.

There's a network of Westinghouse distributors ready to serve you. Call your nearest Westinghouse Supplier for a free Job-Tailored Survey of your lighting requirements. Or write Westinghouse Lamp Division, Bioomfield, N. J.

YOU CAN BE SURE ... IF IT'S Westinghouse (



Quebec Hints New Iron Ore Bed

Sub rosa activities of U.S. Steel's Canadian subsidiary hint at one of the richest reserves ever developed in North America.

Soon, probably early this winter, U. S. Steel Corp. will announce its decision on what looks like the biggest iron ore development in Canadian history. The development is likely to eclipse even Iron Ore Co. of Canada's \$270-million venture in northern Quebec, which started shipping ore to U. S. mills in mid-1954 (BW-Jul.31'54, p78).

So far, U.S. Steel has adhered to a "no announcement" policy on the progress of its wholly owned Canadian subsidiary, Quebec Cartier Mining Co. But QCM's activities have been tangible in that it:

• Uncovered iron ore reserves aggregating 700-million tons, according to Quebec's Dept. of Mines.

• Holds 2,000 mining claims (of about 40 acres each) in clearly delineated ore bodies in the Mount Wright and Mount Reed areas, roughly 150 miles south and southwest of Iron Ore's Schefferville (map).

 Obtained power rights from the province of Quebec on the Hart Jaune River, and formed the Hart Jaune Power Co. to develop the site.

• Obtained railway rights-of-way from the province covering a 312-mile strip. Preparatory engineering is well advanced in laying out 200 miles of a projected 275-mile railroad between Mount Wright and Shelter Bay, 25 miles west of Seven Islands on the northern shore of the St. Lawrence River.

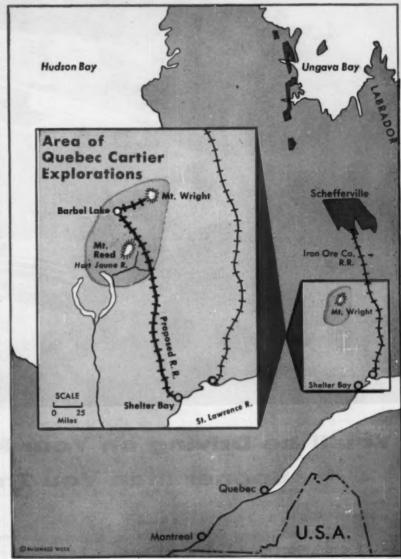
• Operated a pilot plant last summer at Jeannine Lake, and established that the 30% to 35% "lean" iron ore can be upgraded to a 66% concentrate.

Almost completed a 3,200-ft.
 airstrip at Janis Lake, adjacent to the projected site of a 5-million to 10-million-ton concentrator at Barbel Lake.

 Pushed through to mile 105 a trucking access road that initially will be 200 miles long.

 Carried the engineering studies for the concentrator, townsites, railway, power sites, dock and loading installations to the wrapping-up stage prior to calling for tender of bids for construction.

• Proof-These broad hints make it plain that Big Steel's Quebec pet has



passed from the exploration stage to the verge of operation. A conservative estimate puts the figure spent on preliminary work at \$10-million. Mining men say that between \$30-million and \$40-million could have been justified to advance QCM to its present status had it not been for the use of the newest tools. For example, \$1-million or more has been spent on aerial survey alone in the past three years.

QCM's railroad will be shorter than Iron Ore's 360-mile line. But the cost of the concentrator and power requirements is expected to bump U. S. Steel's over-all bill to \$300-million before the iron concentrate flows to the steel mills in the U.S.-probably in 1961.

• Silent Move—So secretive has U.S. Steel been about its Canadian exploration arm that little was known of its Cartier Mining Co., Ltd., for which an Ontario charter was originally taken out in 1900. In 1952, undoubtedly stimulated by the spectacular iron finds in Ungava, U.S. Steel quietly switched its focus to Quebec. Early in 1957, a Quebec charter was secured under the name Quebec Cartier Mining Co., with head offices in the town of Mount Royal, a suburb of Montreal.

About four years ago, with the aid



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Now, the Better Roads Program is under way and gathering momentum. Thanks to modern road building machinery, new highways will soon be open for travel. In the ingenious machines which will be leveling mountains, filling in valleys, finish-surfacing—at a scheduled rate of

hundreds of miles a day—Eaton parts and equipment are contributing to the rugged stamina and dependability which are of critical importance in this demanding kind of service. Wherever motor trucks, earth-movers, levelers, pavers, power shovels are operating, Eaton is part of the picture.

Eaton 2-Speed Axles, for example, enable trucks to pull out of deep-down off-the-highway excavations with full loads—and go when they hit the open road. Eaton Dynamatic Drives activate power shovels that can bite out tons of mountainside at a time! On the job—Eaton valves, tappets, hydraulic valve lifters, valve springs, and other engine parts

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Here Eaton engineers and technicians devise new methods of manufacture and improve existing production operations. Automation equipment is designed, fabricated and teste



EATON MANUFACTURING COMPANY Cleveland, Ohio

of the then-new airborne magnetometer (page 96). Cartier geologists were able to detect important anomalies, and to outline the principal ore bodies from

Backing up the magnetometer survey with heavy field prospecting and diamond drilling programs, U.S. Steel went about building up its 2,000 mining claims.

· Nature of Ore-OCM's new-found ore differs radically from both low-grade taconite and the high-grade (53%) ore that Iron Ore Co. is shipping from Schefferville. Where the tough taconite of the Mesabi range needs special hotflame acetylene drilling, QCM's ore will be open-pit mined with conventional equipment. The Oliver Iron Mining Div. of U.S. Steel's iron ore research laboratory in Duluth has been piloting new processes for ore of the type in the Quebec deposit. The beneficiation will be multi-step-probably a combination of washing and magnetic separation (BW-Oct.12'57,p132), so it will be expensive. But because specularite is not hard rock ore and doesn't need fine crushing, it will not be so expensive to concentrate as taconite.

In appearance QCM's ore is brilliantly black. Called "specular hematite," or simply "specularite," it crushes easily on impact. The resultant large black crystals are so lustrous they have been used in costume jewelry.

· Out of the Bag-To its 2,000 mining claims, QCM last year annexed a single mining concession of 1,000 acres in Conan township. According to Quebec's Mining Act, an exploration company in good standing is eligible for one such concession every 12 months. And, through annual renewal, the mining claims remain in force until development starts. Thus, it's evident that U.S. Steel has preferred to operate in the dark, rather than ask Premier Maurice Duplessis for the special large-area mining concessions he had earlier granted farther north in Ungava.

Still, on two occasions, reports from Quebec have tipped the public to U.S. Steel's activities. In April, 1956, Duplessis was quoted as saying that Cartier Mining Co., Ltd. (as it was then known) had uncovered a vast iron ore reserve. Again, last January, the premier told his weekly press conference that the company was incorporating in Quebec and that a master plan was in the brewing. It would include, he intimated, a railroad, two townsites, a deep water pier, and a hydroelectric

· Master Plan-Seemingly, the government announcement embarrassed OCM officials, and they again fled to cover. But the detail is slowly emerging.

• Planes First-An airstrip at Janis Lake is being rushed to completion in the Barbel Lake region, which has been

earmarked for the concentrator. Engi neers may have their work cut out for them here, because the extreme cold of the winters is followed by fast thaws, which tend to create a quicksand

· Ready for Equipment-With the access roads daily penetrating more deeply, trucks will soon be able to roll in the heavy equipment. Among the first payloads may be the hefty components for the Hart Jaune power project. Three sites are currently under study. Engineers think it may take a combination of sites to produce the 40,000 hp. to 75,000 hp. QCM expects it will need. Estimates of the river's potential run as high as 300,000 hp. To create a reservoir, storage dams are being planned for Little Lake Manicoua-

It makes economic sense to locate the concentrator at the top of the rail run near the mines, leaving the tailings behind and shipping the 66% dry iron concentrate to Shelter Bay. But QCM still has to decide among a 5-million, 8-million, or 10-million-ton capacity as the best size for its concentrator. The restricting factor for the engineers is the limitation of such auxiliaries as trucking between the mine and the concentrator.

The pilot plan at Jeannine Lake has demonstrated that upgrading specularite involves none of the crushing and screening headaches of processing taconite. Taconite grinds to a 275-grain mesh fine powder when crushed; in contrast, the large specularite crystals measure 10-grain mesh.

At this point, QCM seems confident that its projected concentrator will turn out a uniform product of 66% iron or better, so the company may reason that its Quebec find is nearly as valuable as high-grade deposits. One opinion holds that the uniform 66%-plus iron can bring automatic increases of up to 20% of blast furnace capacity at the consuming mills.

Undoubtedly, U.S. Steel sees in the Quebec ore fields a dependable longrange North American source of supply. U.S. Steel's interest isn't dictated by any present shortage of iron. Even if it had in hand enough ore to care for itself for 100 years ahead-which it doesn't, although it will have enough for at least 50 years-it simply has to be interested in any deposit of such size.

Also, U.S. Steel tries to maintain a political balance between competing ore sources. That is, the company likes to have a big, economic supply source outside the Lake Superior area.

Conversely, U.S. Steel is too big to get swept off its feet easily. Since there's no supply urgency, the company canand obviously will-take time to investigate every angle of the project before it takes the plunge. END



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Direct Reduction...

of iron ore comes nearer—as a part of Alan Wood Steel's new H-cycle production of iron powder.

Direct reduction of iron ore, one of metallurgy's more promising technological gambits, moved ahead in the steel industry last week-but not in a way

that had been expected.

Heralded these last 18 months as a major industry weapon against volatile scrap prices and as a potential weapon against the high capital costs of iron-smelting (BW-Mar.31'56,p79), direct reduction bobbed up last week as part of a process to produce iron powderwhich in some applications is competitive with steel.

All this came about when the Alan Wood Steel Co. ordered a 50-ton-perday H-iron reactor as part of its \$3.6million program to enter the iron powder business. The reactor, developed by Hydro-Carbon Research, Inc., and Bethlehem Steel Co., uses one of the halfdozen cycles that have been under intensive study by almost every major U.S. producer of carbon steel (BW-Aug.3'57,p34).

· Commercial "First"-Alan Wood's H-iron reactor may very well establish an important "first"—the first commer-cial use of the fluidized solids technique

in U.S. ferrous metallurgy.

But it's not quite the first commercial use of direct reduction for deoxidizing iron ore in this country. Republic Steel-which has been experimenting with another direct reduction process-established an iron powder plant at Toledo at least three years ago, using hydrogen to reduce high-grade ores. Republic people agree today that the Toledo venture has been less than a staggering success as a money-maker. But it's producing iron powder-and research data-today.

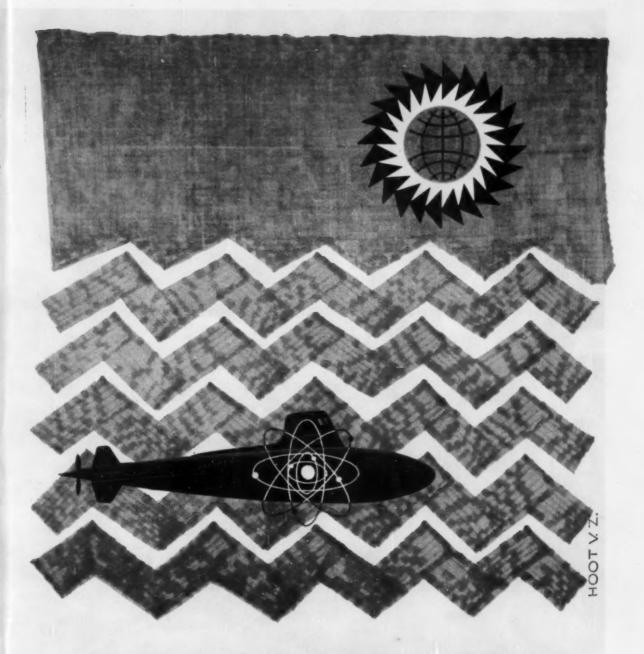
· List of Pros-Alan Wood, naturally. aims at commercial success in the iron powder business. It had been experimenting for about six years, had made considerable material, and had sampled some to the trade. But it sidetracked its experimental work and adopted the H-iron cycle. Here's why:

· The company controls an ore mine at Dover, N. J., whose product is peculiarly suitable for iron powder reduced by the HRI-Bethlehem proc-

· The company has been selling some of its very finest ore for non-steelmaking uses at prices lower than those commanded by iron powder.

• It expects to be able to sell a

greater tonnage of its finest ore as iron



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This project, like others of such high importance, demanded many special steels, plus the kind of specialized knowledge that Lukens puts at all industry's disposal. Fabricators in virtually every field have long called upon Lukens for teamwork. In fact, even back in 1869 when Jules Verne's fictional submarine first fired the world's imagination, Lukens had been a leading plate producer for 44 years.

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and industry, you'll find that consistent use of business magazines will help you "mechanize" your selling. Advertising can create interest, build product preference, tell prospects about product performance. With contact established, your sales force is freed for the important work of making specific proposals and closing sales. You will find the best way to mechanize your selling—at lowest cost—is to concentrate your advertising in one or more of the McGraw-Hill magazines serving your major markets.

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". . . it would enable the reactor to operate at capacity regardless of the iron powder market . . ."

STORY starts on p. 105

powder than it could market for the other uses outside of the steel field.

• It expects to produce low-cost hydrogen—a key to commercial success in several direct reduction cycles—from the byproduct gas of its own coke ov-

• With modest extra investment, the company can make the reactor a source of very high-grade synthetic scrap or synthetic charge ore, giving some leverage against high prices and short supply of both items. Also, it would enable the reactor to operate at capacity regardless of the iron powder market. For iron powder, the reactor is rated at 50 tons per day. On synthetic scrap or synthetic charge ore—each a less thoroughly reduced product—it probably could produce 80 tons daily.

When the project is operating, 18 to 24 months from now, steel technicians probably will be most interested in its fluidized bed technique of transporting heavy solids through the reactor, with finely ground ores suspended in and transported by a high-pressure gas stream. This technique has been quite valuable in the petroleum refining and chemical industries, particularly for the reconstitution of catalysts. If it works out as well in direct reduction of iron ore, it will signal the first solution of a critical problem.

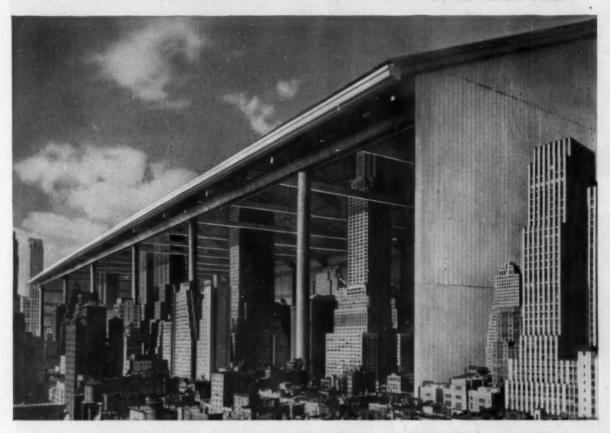
• A Growing Market—Although not wholly dependent on iron powder for the success of its project, Alan Wood insists it isn't looking very far beyond it. Last year, the U.S. market for iron powder was about 32,000 tons—the largest single part of which was supplied by Hoeganaes Sponge Iron Corp., Riverton, N. J., a subsidiary of a Swedish producer. Easton Metal Powder Corp., Republic, and National Radiator Co. are other principal domestic suppliers.

Alan Wood expects to have the trade's lowest production costs, in a market that it estimates will be 50,000 to 60,000 annual tons in a couple of years. It figures it will be able to supply about a third of such a market.

Compacted and sintered, iron powder forms intricate parts that would be quite costly to machine from bar stock. It is also useful in very high temperature flame cutting of high-strength steels and for the coating of welding rods. END

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Many <u>nonmetal</u> consumer products also get their start at Granite City Steel

When Granite City Steel Company heats coal to produce coke (one of steel's three basic raw materials), valuable coal chemicals such as tar, benzol and ammonia are also formed in the process. Sold in tremendous quantities to other manufacturers, these chemicals find their way into myriads of useful products ranging from acid and aspirin to dyes and detergents.

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assembly work and much lower reject rate. Other parts originally designed in ZYTEL include worm gears, dummy truck wheels, clutch drum, clutch shoes, couplers and insulating pivot bushings. (Engine made by Revell, Inc., Venice, Calif.)

This is one of many instances where intricate assemblies have been replaced by a single-shot injection molding of ZYTEL. With fine-tolerance molds, further finishing is usually not required. Parts made of ZYTEL are tough and

abrasion-resistant. Smooth, hard mechanical parts such as gears and bearings need little or no lubrication. Components of ZYTEL can be boiled, and immersed in solvents such as gasoline. ZYTEL has the highest strength-to-weight ratio of any plastic resin.

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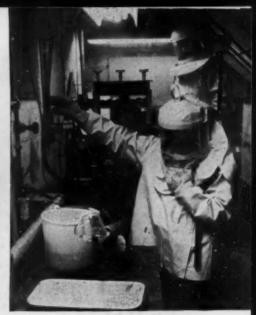


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AT HIS DESK, all Harold M. Gruener, executive vice-president of Intertectics, needs to bind two chunks of aluminum lastingly together is a hand torch and some InterAct.



IN PILOT PLANT, workman handles mixture's corrosive chemicals only with care.



JOINT made with InterAct process is so strong that metal will break before it will.

A New Way for Metals to Marry

Chemical reaction simplifies joining one nonferrous metal to another in a new process.

APPEARANCES to the contrary, the executive in the picture above is not a modern version of the medieval alchemist. His attention is fixed on a demonstration of a new way to wed nonferrous metals—a chemical process that forms a bond in most cases stronger than either of the two metals brought into partnership.

The process makes use of a new product called InterAct, devised by

Intertectics, Inc., in the Cleveland suburb of Bedford. It is important because, among other things, it solves some of the problems of joining aluminum, which is difficult to solder or weld. It may make it much more practical to join copper and aluminum—commonly used together in electrical apparatus. In fact, it works with all nonferrous metals except those that have a high silicon or nickel content and certain "rare earth" metals.

 Applications—Intertectics envisions a number of ways for the InterAct process to go to work:

Joining aluminum electrical

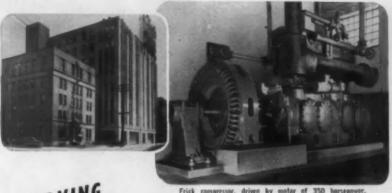
cables and electrical wiring in the field.

• Joining cast aluminum parts.

• Joining two metals in a variety of aircraft and missile parts.

 Binding the electric heating element to automatic cooking utensils of aluminum.

• How It Happens—The process is based on a chemical reaction with the metals being joined. Zinc chloride and other chemicals in the InterAct formula react with oxide film on the surface of the metals. This reduces the zinc chloride to zinc, which alloys with the surfaces and creates an eutectic—an alloy with a lower melting point than



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The two plants of O'Keefe Brewing Co. Ltd. in Toronto (a subsidiary of Canadian Breweries Ltd.) use four large Frick refrigerating machines. These

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ARMCO STEEL BUILDINGS



any of the individual base metals in

Since the melting point is relatively low, the joint can be formed with relatively low heat.

One prerequisite for successful joining is that both metals must be at the same temperature for the desired reaction to occur. So, in commercial operations, it will usually be necessary to heat the parts under accurate temperature control. Companies using the new process probably will have to install furnaces and special equipment for handling materials. The joining would be done in the furnace.

Since fumes from the reaction are toxic, commercial users must also provide a system for removing them.

 Availability—Intertectics will market its new product in three forms, varying according to the use for which it is intended:

 InterAct-E, similar in formula but in powder form, is suggested for joining broader areas of contact.

• InterAct-G, consisting of aluminum trichloride, zinc chloride, and sodium chloride in granular form, is recommended for bringing large surfaces together at lower temperatures—such as in joining foils.

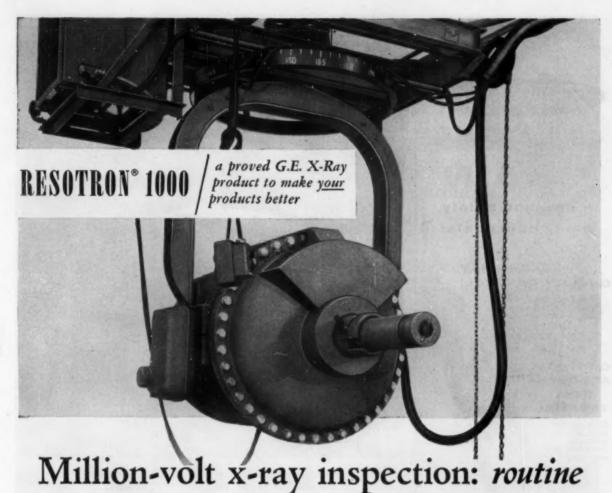
Besides selling the materials, Intertectics plans to offer engineering advice

to its new customers.

• Distinctions-The InterAct process works quite differently from soldering. welding, or brazing. In soldering, a third material is introduced to the joint, and the two surfaces are joined to it. In welding, the joint is made by heating the metals above their melting points, and this must frequently be followed by annealing-which Intertectics says is not needed with its process. Welded joints may have a high resistance to electricity, which is not the case with InterAct joints, the company says. In brazing, additional flux materials are necessary to remove the oxide lavers from many nonferrous metals, and the resulting joint is very vulnerable to corrosion. InterAct joints, the company says, preserve all the resistance to corrosion of the original ma-

Intertectics perfected its products early this year, since then has concentrated on devising a workable manufacturing process. Because the chemicals involved are highly corrosive in contact with moisture, it is necessary to protect them from air throughout the production process.

The company now holds a dozen patents on the materials, with tentative approval of nine production patents and about 10 more pending. END



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Using a G-E Resotron 1000 and a specially designed jig, Misco Precision Casting Co., Whitehall, Mich., now inspects seven times as many jet engine turbine blades per exposure as they did with their lower-voltage (250 kvp) equipment. This is just one example of how super-

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NEW PRODUCTS



CHARTS are drawn automatically by this instrument as computer data is fed in.



SOLID LINE GRAPH (shown here), dotted line, or bar graphs can be drawn.

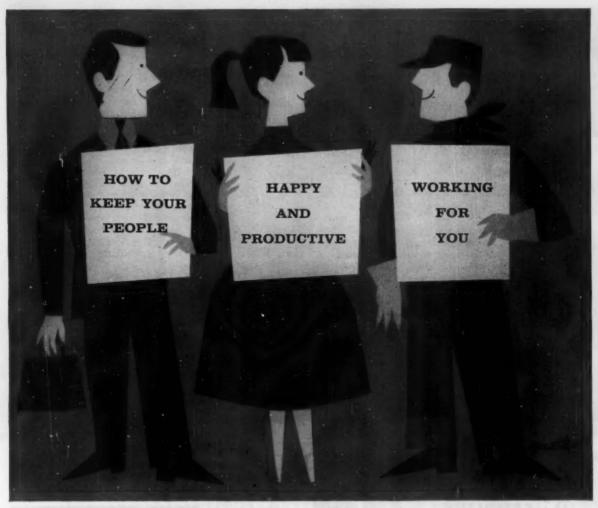
It Draws You a Picture

Deciphering the maze of numerical calculations spinning out of the magnetic drums of digital computers often is difficult even for skilled mathematicians. And for management, the job of trying to find a quick meaning in a mass of figures can be a genuine nuisance. Generally, the task gets passed on to a draftsman who makes up graphs from the statistical information so that the course of sales, production, or inventory can be seen at a glance.

But this takes time—human brains and hands are no match for the lightning speed with which the electronic machines serve up figures. That means graphs are always lagging behind operations, that by the time one is completed a new series of figures may be coming out of the computer.

• Automatic Plotter—The logical solution to this situation is a machine that automatically translates the computer data into graphs. That's just what the instrument pictured above does. In the space of a few seconds, it plots solid line, dotted line, or bar graphs directly from the information stored in the computer, or being fed into the computer.

The instrument was developed by Electronics Associates, Inc., Long Branch, N. J., a major manufacturer of analog computers. What the company did was to coordinate two basic prin-



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• Stepping Stones—One of these is plotting board used during World War II to guide aircraft. Radar information moved an ink stylus across a map.

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• How It Works—Information from punched cards, punched tape, or magnetic tape is fed into the Dataplotter. It takes only 13 seconds for the machine to digest and store each piece of data electronically. When the next information is fed in, a line is drawn between the two information points.

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• Cost—The Dataplotter costs about \$20,000. But, before long, Electronic Associates plans to put out a smaller model that will cost about \$12,000 and perform the same basic functions.

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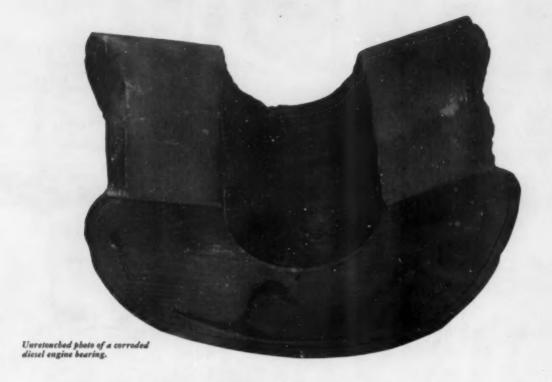


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Assistants to the Presidents:

What Uses Do They Serve?

"An assistant to the president familiar with his policies can relieve the top man of petty details, free him for major decisions, important talks."

"If the position is too big for one person, the work should be divided up into as many positions as required, each with specific responsibility and authority."

"Usually assistants are brought in to do particular jobs, but almost invariably their work spreads far beyond the original plan."

Handy Men With Growing Power

Assistants to the president are multiplying fast in U.S. business, with jobs almost as varied as their number—from glorified clerks to behind-scenes powers. Despite some critical shafts, they look like comers—the job has built-in growth potential.

More and more, in recent years, a new-old title is cropping up in corporate organization charts—the assistant to the president.

It's that little word "to" that counts. Plain "assistants," in the sense of line lieutenants, have existed since the beginning of time. In the corporate sense, they'll range, as to title, from say, an assistant treasurer to an assistant stock room manager. Usually, their jobs are easily definable—an individual who shares to a degree the responsibilities of his immediate superior, and in the latter's absence, takes over his authority. In most companies the executive vice-president or the "senior" vice-president stands in that relationship

"Assistants to," however, are something different—and curiously indefinable. Also known as "executive," "special," or "administrative" assistants, their real duties can range anywhere from those of a glorified secretary to the functions of an actual operating boss of a company—with almost every possible gradation of authority or influence in between.

• Spreading—Arguments over the relative values of the title still flare up in management circles, but one thing is certain: Both the use of and the powers of "assistants to" are growing.

BUSINESS WEEK SURVEYED SOME 300

companies across the country, found that almost 70% now have an "assistant to the president." In the vast majority of cases, the job and the title have been created within the past five years. Salaries range anywhere from \$10,000 to \$75,000 a year. In some cases there were also assistants to the chairman, and to certain selected vice-presidents. A few presidents used multiple assistants-to, occasionally as many as four.

Among those companies that still do not use them, many were violently against the idea—but a fair number were "investigating the advisability of setting up such positions." The hard core of the opposition, however, seems irreconcilable, declaring that the whole idea makes no sense, is a sign of fuzzy organization, and can create more confusion than it clears up.

But the ayes appear to have it, and along with increasing use of the title, the powers of its holders seem to be growing—perhaps more because of, than despite, the indefinable nature of the ioh

I. Assistant's Empire

Here is a not untypical example: About four years ago, when one good-sized company was about to embark on an acquisition binge, a lawyer was brought in as assistant to the president, to be special adviser and trouble shooter on companies to be picked up. The buying spree tapered off quickly. The assistant found other outlets. Over four years, his job has changed considerably from anything originally planned. Today he can, if he wants to, powerfully influence policy in spite of the fact that technically he has no line authority at all.

He is the one man in the company really close to the president. He screens the president's mail, decides what should be passed on. He saves his boss time by clipping and passing on items he thinks the boss should, or might want to, read. He makes appointments for him—even with line executives. He acts, in effect, as a pre-trial hearing examiner in disputes between departments or individuals—and passes on to the president his own opinion of the dispute.

Overtly, he makes no decisions—but there's little question that the president's decision on many matters is influenced by his presentation. He acts as crying towel for others who have a grievance, but do not want to broach it to the president directly. He serves as a transmission line when the boss "wants the word passed" but does not want to put out an official order.

He makes no policy decisions in the president's absence—but as an ex-officio member of the executive committee, he can and does "advise them" on whatever he knows, or thinks, the president's policy is. He appears for, and speaks for, the boss at many public functions. He can be bypassed easily—but he has far more time at the president's absence of the president of the president

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• Personalities—This man, or the category of assistants-to he represents, is no Svengali to the president's Trilby. Every relationship of boss and assistant-to is a highly personal one—every combination has some elements of uniqueness that make any generality invalid—and remains in fragile balance only as long as the boss retains full trust in, and liking for, his aide.

• Built-In Expansion—The wide-range assistant-to still makes up a minority of the whole group—and in most cases the job was not originally intended to have such scope. Most aides still fit comparatively narrow niches, are very definitely specialists. But except in special cases—where the man holding the title is, in effect, the executive vice-president and heir apparent to the presidency, or at the other extreme, where the aide's spot is used primarily as a training tool, with a rapid rotation in the job—the very title seems to have a built-in capacity for growth.

II. Creature of the Times

Why the increased use of the position? Certainly the "king's favorite," whether as jester or adviser, is an institution as old as time—and there's an element of that tradition left in the assistant-to today. As the right arm of the boss, he often has no existence of his own—and if the president's head should roll, so may his.

But far more, the modern assistantto is a creature of the times. The administrative rationale goes this way:

Much of the routine foisted upon the top man does not really require his personal attention. Checking work in progress, assigning specific tasks, deciding on minor problems or complaints—these jobs can as easily be handled by an assistant closely familiar with a president's policies and plans. With the top man's time cleared of the petty details, he is available for major decisions, important direct conversations that do require his immediate attention.

In practice, other factors may bulk larger. Many of them come out of the wild expansion of U.S. industry over

the past 20 years.

"Part of it," says one assistant, "is that things a company president never had to be concerned with—such as community affairs—are now being dumped in his lap. He's got to get out from under somehow, and he can't drop the extra chores on his regular department men."

III. Point of View

When you look into the reasons why the job usually grows past the original intention, you get somewhat different impressions from the aide group and from the presidents themselves.

• Assistant's Version—One assistant, who describes his group as "the 'Hey, you' guys," has this explanation: "You're there. So when something comes up that doesn't fit an easily definable slot, the boss says, 'check into it.' Or you finish a project, and there's nothing major on the calendar, so you start looking around. You're not bucking for his job, so he talks to you more—and more frankly—about the people and the problems, than he can to anyone else.

"After a while, you know what he thinks, and how he thinks, about everything from production policies to politics. So when something comes up that you know the answer for, you take care of it, and he doesn't have to be bothered. That's what the job is."

• In the Boss' Eye—From the president's standpoint, this picture emerges: There is never enough time for everything, so it's a relief to have someone always handy to take care of time-consuming chores that are really superfluous to policy and planning.

More important, as the company gets bigger, it gets more and more "organized." There are division vice-presidents, group vice-presidents, staff vicepresidents. But each has a specific sphere of interest. The president can have all the staff conferences necessary to coordinate the business-but he's got nobody to "just plain talk to." With an assistant-to-whose only loyalty is to himself personally, who has no stake in the jockeving of one division or department against another-he can bounce half-formed ideas off the assistant without precipitating a scramble, discuss personality problems without alerting company grapevines or company politicians.

Moreover, the assistant is highly mobile—he can talk to anybody about anything, and so becomes a highly valuable source of information—in both directions—that might otherwise get lost in

channels.

IV. All Varieties

Most assistants-to today, however, are still comparatively narrow-range. In one company, the aide's primary duty is to run the company's private airline. In at least one case, the title is a euphemism for the advertising manager, "because we've found the president's assistant gets prompt attention where the advertising manager used to cool his heels in an anteroom."

A considerable body of assistants-to are essentially public relations men, representing the company and the president in community affairs, handshaking visiting VIPs, and writing the president's speeches. A rapidly declining number were originally tagged for their





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"Washington contacts." And in a very few cases, the title is used to ease out an executive who has outlasted his usefulness, keep him occupied with a title and routine chores till he can decently

· Special Jobs-Frequently the narrowniche aide is an important one. At Koppers Co., the assistant to the president, Richard S. Rhodes, has a specific assignment; to develop, recommend, and implement policies and procedures for the company's capital program. At Allegheny Ludlum Steel Corp.—where the president has no assistant, but several vice-presidents do-Dr. Theodore T. Magel was recently appointed assistant to the vice-president-technical director, charged with coordinating all the corporation's activities in zirconium and other special metals.

In the Business week survey, the largest number of assistants-to fell into three original categories: advisers in public relations, finance, and legal matters, generally completely independent of fully staffed existing departments in those fields. Usually they were brought in to do particular special jobs in their fields. But almost invariably, the spread of their work goes far beyond the original plan.

· Changing Pattern-Rarely is the assistant-to in a line capacity, and very few aides have authority to give, or even transmit, direct orders to any other executive. Yet now the job, once considered the end of the road, is being eagerly sought-and the survey indicates that some earlier conceptions of it are changing.

Even proponents of the assistant-to as an administrative device sometimes argue that for an assistant to be really useful, he must be able to subordinate his own preferences-in personal idiosyncrasies as well as work habits-to that of his boss. Ideally, he should get his sense of importance and personal worth from his boss' accomplishments instead of his own. So the ambitious and individualistic executive should make a poor bet for the job.

· Rung on the Ladder-But though the assistant as such has no line capacity, the job is more frequently becoming a solid steppingstone to a top line job. Among men who have served hitches as "assistant-to": T. S. Petersen, pres-ident of Standard Oil of California; Ernest S. Marsh, president of the Santa Fe railway; Mark Cresap, executive vicepresident of Westinghouse. Dale V. Cropsey, who started as assistant-to at Elgin National Watch Co. less than six months ago, was appointed last month vice-president for the company's new industrial products operation.

At American Machine & Foundry Co., four of six current operating heads of divisions, including the executive vice-president, started with the com-



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pany as assistants to Pres. Morehead Patterson. Patterson's philosophy is to hire "men" (that is, individuals who impress him personally) rather than specific background, let them rattle around a while as assistants until a proper niche is found.

• It Works Both Ways-Nowadays, too, it's not at all unusual for a man to step up from a ranking line job to

an assistant spot.

At Inland Steel, for instance, Lemuel B. Hunter had been president of the company's Steel Container division before moving into the aide's job created last year. Graham Morgan was vice-president and merchandising manager at U.S. Gypsum Corp. when Chmn. Clarence H. Shaver tagged him as his assistant three years ago. Roland Pierotti, a vice-president of Bank of America since 1947, was definitely considered "promoted" when he became assistant to Pres. S. Clark Beise in 1954.

In several cases, assistants—though they have no line capacity in the parent company and are theoretically subordinate to the top line vice-president actively head up subsidiary companies

as operating chiefs.

• Training Spot—Some firms have adopted the device as a deliberate instrument for executive development. Here regular rotation in the job is the

One company picks a promising man on the lower supervisory levels, makes him presidential aide, handling routine administrative chores, but "learning the breadth of operations." At the end of a year, he returns to his original level—but the company assumes the "special training" he got during the year will help him move up fast. Another starts with an official already well up the ladder, puts him in as presidential assistant for two years. Then—unless the man has flubbed during that time—he's moved to the vice-presidential level.

V. Vocal Opposition

In spite of the growth of the practice, dissenters still abound who see the whole system of assistants-to as either

nonsensical or dangerous.

One of the more vocal critics, Ralph J. Cordiner, president of General Electric, insists GE "has no place for assistants, assistants-to, or administrative assistants." Such positions, he says, create confusion as to responsibility, authority, and accountability. "If the position is too big for one person, then the work should be divided up and reorganized into as many positions as are required to do the work efficiently. Each position should be able to stand on its own, with specifically defined areas of responsibility and authority."

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dissenters argue that the top executive who uses an assistant is simply admitting that he is not capable of delegating fully and effectively to his line subordinates.

Even more dangerous, they suggest, is that the assistant sometimes becomes an actual block in the channels of communication between president and senior line executives—with the resulting misunderstandings infinitely more time-consuming and troublesome than the routine chores saved.

"Lots of times," says one, "there's no way, except instinct, for another officer to know clearly when 'the word' dropped by the assistant is indirectly an order from the boss, the assistant's own idea, or simply casual conversation. If he guesses wrong, he's in trouble."

• Overprotecting the Boss—In the other direction, the critics suggest, an aide can sometimes insulate the top man too well from petty problems. "The 'little' problems are all too often the seeds of the great big problems," says another. "The assistant 'takes care' of them, sure. But if they'd come to the president's direct attention early enough, his greater experience could spot potential that the assistant misses completely."

• Horrible Example—And sometimes, these dissenters add, the situation can get plain silly. And as one horrendous example, they point to what's going on right now in a giant Midwestern company.

Mr. Brown and Mr. Blue—to disguise their real names—were, not long ago, both divisional managers. Each had a public relations manager for his division. One day, Blue was promoted to a top staff job. He no longer needed a public relations manager, but he liked the man, took him along as "assistant to the vice-president."

That left Brown's PR man—an ambitious sort—writhing. So he talked Brown into making him "executive assistant." Later Brown got a top staff job also, and took his man along as "executive assistant to the vice-president."

Today, neither Brown nor Blue has any real need for either executive assistants or PR men. But Blue likes his man personally, doesn't want to kick him back down the corporate ladder. Brown has found he has an eager flunkey, a drinking and traveling companion. But Brown's man is still ambitious. He has developed the habit of calling up other executives with the word that "Mr. Brown would like you to . . ."—when, in fact, the idea has never occurred to Brown. The rest of the staff are making book on just how soon Brown gets into trouble himself because of his over-eager "assistant." END



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In Management

McGovern Takes Over Presidency Of U.S. Rubber; Centralization Seen

Last week, after 37 years with the company, executive vice-pres. John W. McGovern took over as president of U.S. Rubber Co. H. E. Humphreys yielded the title of president, continues as chairman of the board



and is the chief executive officer. However, outsiders see some important organizational changes in the shuffle, and a shifting away from U.S. Rubber's "management by committee."

The 62-year-old Mc-Govern, who has been designated chief operating officer, will hold his post for only three years before retiring. Two

before retiring. Two younger men, Eugene Luxenberger (54) and George Vila (48), will handle the corporation's operating divisions between them, reporting directly to the presidential level and above. This is a shift toward centralized straight line control and away from the giant rubber company's previous decentralized operations.

McGovern, who joined U.S. Rubber as an accountant in 1920, rose principally through the controller's side of the business until the late 1930s when he moved into general management as assistant general manager of the tire division. When the company organized a brand new wartime venture, its munitions business, in 1941, McGovern was made its general manager. From this he moved over to head the tire division in 1943. He became a vice-president of the company in 1945, a director in 1951, and executive vice-president—and heir apparent—in 1956.

Texas Eastern Charges Freezeout To Oil And Barge Companies; Asks \$32-Million

Texas Eastern Transmission Corp., Shreveport, La., has filed a \$32-million civil damage suit against three oil companies, nine barge lines, and one individual.

Texas Eastern has since 1954 been out to convert a major segment of the Little Big Inch Pipeline from gas to service as a common carrier of petroleum. The company says this would be cheaper than present combination ship and barge operations, and would permit Texas-Louisiana-Arkansas refiners to compete with the three oil companies it is suing and with other Midwest marketers.

In the suit, Texas Eastern alleges an illegal combination and conspiracy to harass, delay, and prevent any and all pipeline companies from developing a petroleum pipeline from the Gulf Coast area to the Midwest.

The Federal Trade Commission has charged the Texas Co. with illegal and discriminatory pricing practices in the Portsmouth-Norfolk-Virginia Beach area where a price war is going on. The FTC has also filed suit against North American Phillips Co., Inc., for alleged discriminatory prices, promotional allowances and demonstrator services in the sale of its Norelco electric shavers. Earlier FTC had slapped similar charges on Shick, Inc.

Success Blunts the Creativity Of Scientists, Survey Shows

Creative scientists are thorough and cautious, a recent small sample study of industrial scientists reveals. The University of Chicago study of a U.S. oil company also indicates that, contrary to traditional belief, the scientists who produce the most new ideas are not "hunch players" but are long-range thinkers willing to "delay immediate success for eventual solution of problems."

Also they are individualists who "don't seek the approval of either their associates or society, are intent upon their own goals and willing to achieve them." But the survey concludes with a sour note: Success appears to diminish creativity. The higher creative scientists rise within a company the less individual—and the less creative—they become. Pressures for conformity to a success pattern are blamed for this.

Asarco Signs Antitrust Consent Decree, But Denies Its Practices Are Illegal

Last week the American Smelting & Refining Co., biggest smelter and refiner of non-ferrous metals (BW-Nov.24'56,p96), signed a consent decree on its four-year-old antitrust suit. The company denies that its business practices are in any way improper or illegal. It notes that the contentions of the antitrust department involve principally transactions that took place 30 and 50 years ago, but to avoid a long-drawn court case it agreed to:

• Eschew any price fixing agreements and specifically to refrain from exchanging price information with St. Joseph Lead Co., the other giant in the field, which also has a government suit against it.

 Not to acquire any domestic lead smelter or refinery for the next 10 years, and after that to get court approval on any expansions.

 To conduct all lead refining for St. Joseph for the next seven years only with the consent of the Justice Dept. or the court. The judgment restricts the amount of lead American can refine for St. Joseph, but leaves St. Joseph free to refine as much as it wishes for itself.

• Asarco also agreed not to enter any agreements to limit the production of lead in the U.S. It may not be party to any cartel agreement to restrict imports or exports of lead in the U.S., and it may not enter any toll contract for smelting or refining that would close down any smelter or refinery not owned by American.

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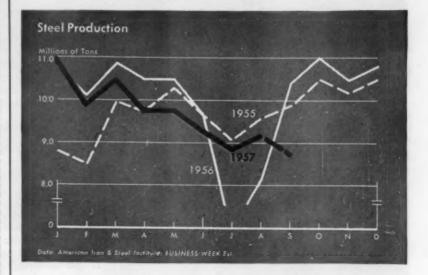
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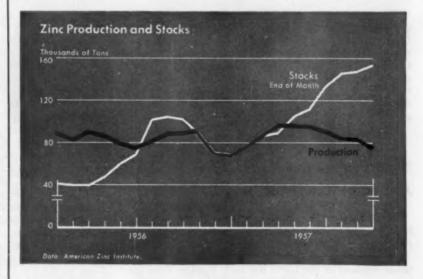


Disappointing Month for Steel

Steel production failed to make an expected rise in September. Output during the month was the lowest for any September since 1954. In only two other postwar years has output failed to register an increase from August to September.

September's operating ratio of about 82% also was the lowest for the month since 1945's 76.3%, with the exception of the recession year of 1954 (66.7%).

October production probably will fall below the comparable months in 1956 and 1955, but above 1954.



Stocks Are Still Mounting

Smelter stocks of slab zinc rose for the ninth consecutive month, making the September level the highest since 1954. The increase occurred despite the lowest production since October, 1954. It was the fourth consecutive drop.

Shipments in the first nine months (including those for the government and export) were almost 1% higher than a year ago, but they still lagged

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BUSINESS WEEK



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To The Solution of Management Men's Problems 14% behind the comparable 1955 period. After the encouraging July-to-August increase, the industry had

hoped for a pickup in demand. But shipments in September slipped about 8,000 tons below August.

REPLIES (Box No.): Address to office nearest you c/o This publication Classified Adv. Div. NEW YORK: P. O. Box 12 (24) CHICAGO: 520 N. Michigan Ave. (11) SAN FRANCISCO: 68 Post St. (A)

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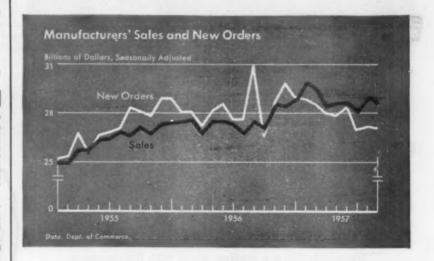
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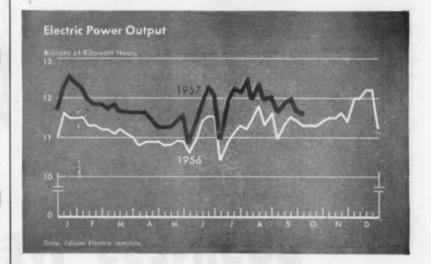
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Orders Continue to Lag

sales in Manufacturers' August dipped \$400-million under the July level after allowance for seasonal variation. Although sales were down from the early part of the year, they are still above their year-ago level. But the indications are that they will move lower. Reason: New orders have consistently lagged behind sales since the beginning

of the year, for the first time since the 1953-54 recession. New orders declined from July to August, after adjustment for seasonal variation, and also trailed year-ago figures for the third month in a row. Manufacturers' inventories at the end of August remained at the high \$54.1-billion level (seasonally adjusted) reached one month ago.



Gains Are Diminishing

For the first eight months of 1957, electric power production maintained a substantial lead over a year ago. It still is topping 1956 levels, but the gains in the last few weeks have been considerably smaller than earlier in the year. This reflects the slower rate of industrial output in the last month and a half relative to 1956. Last year power output held to its normal seasonal level.

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Index for Business Week October 19, 1957

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Agency-N. W. Ayer & Son, Inc.
Agency—Marson, Marquette & Soash, Inc. AMOCO CHEMICALS CORP. 73 Agency—D'Arcy Adv. Co. THE ANACONDA CO. 88
THE ANACONDA CO
ARMCO DRAINAGE & METAL PRODUCTS, INC
Agency-N. W. Ayer & Bon, Inc.
ASSOCIATION OF AMERICAN RAILROADS 82-83 Agency—Benton & Rowles, Inc. 84LTIMORE GAS & ELECTRIC CD. 52 Agency—Speed & Co., Inc. 84LTIMORE & OHIO RAILROAD. 33 Agency—The Richard A. Foley Adv. Agency, Inc. 84NKERS BOX CO. 96 Agency—Frank C. Jacobi BELLOWS CO. 115
Agency-Speed & Co., Inc.
Agency.—The Richard A. Foley Adv. Agency, Inc.
Agency-Frank C. Jacobi
Agency—Ralph Gross Adv., Inc.
Agency—Gardner Adv. Co.
Agency—Frank C. Jacobi 8 ELLOWS Relab Gross Adv., Inc. 8 EMSery—Relab Gross Adv., Inc. 8 EMSery—Relab Gross Adv., Inc. 8 EMSery—Bardner Adv. Co. Anney—Gardner Adv. Co. 16 Agency—Ketchum, MacLood & Grove, Inc. 8 LIE CROSS-BLIE SHIELD COMMISSIONS Agency—Walter Thompson Co. 80 OINE ELECTRIC CO. 80 OINE Agency—The Frankovic Adv. Agency Inc.
COMMISSIONS
BODINE ELECTRIC CO
BOSTITCH, INC 51
Milne Ltd.
SUNDY TUBING CO
Agency-Campbell-Ewald Co.
Agency—Campbell-Ewald Co. BUTLER MFG. CO. Agency—Aubrey, Finlay, Marley & Hodgson, Inc. CHART-PAK, INC. 154
BUTLER MFG. CO. Agency—Aubrey, Finlay, Marley & Hodgson, Inc. CHART-PAK, INC. 154 Agency—Wm. B. Remington, Inc. CLUES (CLASSIFIED ADVERTISING)282
Agency—Sparrow Adv. Agency CONTINENTAL MOTORS CORP. 98 Agency—The Hopkins Agency COOPER ALLOY CORP. 168
COOPER ALLOY CORP
COOPER ALLOY CORP. 168 AgencyBt. Georges & Keyes, Inc. CORNING GLASS WORKS 191 AgencyBunrill Co., Inc. CUTLER-HAMMER, INC. 167
CUTIER HAMMER INC
Agency—Kirkgaser-Drow DEARBORN CHEMICAL CO
Agency—The Buchen Co. DENVER EQUIPMENT CO
Agency—Young & Rubicam, Inc.
F. W. DODGE CORP.
Agency-Batten, Barton, Durstine & Osborn, Inc.
Agency—Battett, Barton, Durstane & Gaoun, 1128 EATON MFG. CO
Agency—Clark & Boberts, Ins. EXECUTONE, INC. Agency—The Joseph Kaiz Co. EXIDE INDUSTRIAL DIV. THE ELECTRIC STORAGE BATTERY CO. 54 Agency—Clark & Rogers FACIT, INC. 122-123
STORAGE BATTERY CO 54
Agency—Gray & Rogers FACIT, INC
FAULTLESS CASTER CORP
FINNELL SYSTEM, INC
FACIT. ING. 122-123 Agency—Anderson & Cairna, Ins. FAULTLESS CASTER CORP. 197 Agency—Pertin-Paus Co. FINNELL SYSTEM, ING. 12 Agency—Johnson, Read & Co., Inc. THE FIRST NATIONAL BANK OF CHICAGO. 74 Agency—Poote, Core & Belding FLORISTS TELEGRAPH DELIVERY ASSN. 106 Agency—Grant Adv. Inc.
FORT WAYNE CORRUGATED PAPER CO 138 Agency—Doremus & Co.
FRICK CO
Agency—Curtiss, Quinian, Keene & Peck, Inc.
Agency-Klau-Van Pietersom-Dunlap, Inc.
Agency—Waynesboro Adv. Agency FULLER MFG. CO. Agency—Curlus, Quinian, Keene & Peck, Inc. GENERAL ELECTRIC CO. (X.RAY DEPT.). 187 Agency—Klau-Van Pietersom-Dunlap, Inc. GENERAL FIREPROFING CO
Agency-Knox Reeves Adv., Inc.
GENERAL REFRACTORIES CO
Aganey-Strauchen & McKim
THE B. F. GOODRICH CHEMICAL CO
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ASSECT—The Fred M. HABGEL CO. HYATT BEARINGS DIV., GENERAL BOOMS COUNTY OF THE CO. HOLLOW CO. HOLLO
INDIANA DEPT. OF COMM. & PUBLIC
RELATIONS
CORP
INTERNATIONAL SUSANESS MACHINES CORP. Agency—Benton & Bowles, Inc. MYERNATIONAL HARVESTER CO
INTERNATIONAL SWIMMING POOL CORP. 6
Arency-Wilson, Haight, Welch & Grover, Inc. 18FFREY MFG. CO. 39-31 Agency-The Orizondi-Eshleman Co. 19HA-17 The Orizondi-Eshleman Co. 19HA-18
JOHNS-MANVILLE CORP. (ACOUSTICAL
Agency-J. Walter Thompson Co.
Asency—J. Walter Thompson Co. KEASBEY & MAYTISON CO. Asency—Ruthrauff & Ryan Inc. KEYSTONE STEEL & WIRE CO
Agency—Thomson Adv., Inc. KLING PHOTO CORP
Agency—Thomson Adv., Inc. KLING PHOTO CORP. 190 Agency—Herbert Baker Adv., Inc. R. G. LE TOURNEAU. 88 Agency—D'Arev Adv. Ca.
Agency—D'Arcy Adv. Co. LILY-TULIP CUP CORP
LILY-TÜLIP CUP CORP. 142 Agency-Tev Adv. Agency, Inc. LUFTHANSA GERNAN ARRLINES 197 Agency-The Albert Woodley Co. LUKENS STEEL CO. 176 Agency-J. M. Mathes, Inc. LUNBUS CO. 138
Agency—The Albert Woodley Co.
LUKENS STEEL CO. 176 Agency—J. M. Mathes, Inc. LUMMUS CO. 133 Agency—G. M. Basford Co.
Agency G. M. Basford Co. THE LUNKENHEIMER CO. 63
Asency—Norman Malone Assoc., Inc.
Agency-Reincke, Meyer & Finn, Inc.
Agency—Byron II. Basford Co. Agency—Norman Malons Assoc, Inc. LYON METAL PRODUCTS, INC. 70 Agency—Reinche, Meyer & Finn, Inc. Agency—Reinche, Meyer & Finn, Inc. Agency—The Griswold-Enheman Co. MANNING, MAXWELL & MORRE, INC. 91 Agency—Byron II. Brown & Staff Inc. 194 Agency—Byron II. Brown & Staff Inc.
Agency—Fuller & Smith & Ross, Inc. MARSHALL & STEVENS, INC. 194
Agency—Byron H. Brown & Staff Inc. THE MeBEE CO
THE MODES OF THE PARTY OF THE P
Machan Hill Burt 1841 NO CO 186 189 189
THE MeBEE CO. Asency—C. J. LaRoche & Co., Inc. MeGRAW-HILL PUBLISHING CO., INC. 180-181 MEILINK STEEL SAFE CO. SI
AGENCY - J. LAROCHE & CO., IBC. MCGRAW-HILL PUBLISHING CO., INC. 180-181 MEILINK STEEL SAFE CO., GI AGENCY - Blaco Adv. Agency MILWAUKEE DUSTLESS BRUSH CO198
MILWAUKEE DUSTLESS BRUSH CO191 Agency—Black Herr Adv. Agency, Inc. MINNEAPOLIS, MONEYWELL BEGUL ATOR
MILWAUKEE DUSTLESS BRUSH CO191 Agency—Black Herr Adv. Agency, Inc. MINNEAPOLIS, MONEYWELL BEGUL ATOR
MILWAUKEE DUSTLESS BRUSH CO191 Agency—Black Herr Adv. Agency, Inc. MINNEAPOLIS, MONEYWELL BEGUL ATOR
Agency—Base Outs Less Brush Co
Agency—Base Outs Less Brush Co
Agency—Base Outs Less Brush Co
ARROY—BARO AND ARROY MILWAUREE DUSTLESS SHUUSH CO. 198 MARKAL SERVICE ARROY ARROY LO. 198 ARROY—FOOTE, CORE & REIGHTS MINNESOTA MINING & MFG. CO. 188 ARROY—MacMatus, John & Adams, Inc. MINNESOTA MINING & MFG. CO. 100 ARROY—GLUTHAUM & MFG. CO. 100 ARROY—GLUTHAUM & MFG. CO. 100 ARROY—Stanley Pfaum Assoc. 148 ARROY—Stanley Pfaum Assoc. 148 MISSOUR DIV. OF RESOURCES & DEV. 61 MOTOH & MERRY WEATHER MACHINERY CO. 200
ARROY—BIAGO AND AGENCY MILWAUKEE DUSTLESS BRUSH CO
Agency-Foots, Come & Belding MINESOTA MINING AFFECT INC. MINESOTA MINING & MFG. CO. ST. Agency-Foots, Come & Belding MINESOTA MINING & MFG. CO. ST. Agency-Foots, Come & Belding MINESOTA MINING & MFG. CO. ST. Agency-Foots, Come & Belding MINESOTA MINING & MFG. CO. ST. Agency-Foots, Winesota MFG. CO. MISSION PAK Agency-Stanley Pilsum Assoc. MISSOURI DIV. OF RESOURCES & DEV. ST. Agency-Foots Winesota MINISOURI DIV. OF RESOURCES & DEV. G. Agency-Foots Winesota MINISOURI DIV. OF RESOURCES & DEV. MOO. 4 MERRY WEATHER MACHINERY Agency-Foots Winesota MINISOURI DIV. OF RESOURCES & DEV. MUELLER CG. MUELLER CG. MUELLER CG. MERRY FOOS AGY.
ARROY—BASE OUT AGENCY MILWAUREE DUSTLESS BRUSH CO. 1981 MILWAUREE ARROY—AL HERVALL REGULATOR CO. 1981 ARROY—AL HEVY ARROY ID. MILWEST ARROY—AL HERVALL REGULATOR CO. 1981 ARROY—FOOTE, CODE & Bedding MINNESOTA MINING & MFG. CO. 198 ARROY—MACMARUS, John & Adams, Inc. MISHON PAR. 1982 MINNESOTA MINING & MFG. CO. 198 ARROY—BLAIREY PHAUM ASSOC. 148 ARROY—FOLIN-WOODBURY, ID. MISSOURI DIV. OF RESOURCES & DEV. 61 ARROY—FOLIN-WOODBURY, ID. MISSOURI DIV. OF RESOURCES & DEV. 61 ARROY—FOLIN-WOODBURY, ID. MISSOURI DIV. OF RESOURCES & DEV. 61 ARROY—FOLIN-WOODBURY, ID. MISSOURI DIV. OF RESOURCES & DEV. 61 ARROY—FOLIN-WOODBURY, ID. MISSOURI DIV. OF RESOURCES & DEV. 61 ARROY—FOLIN-WOODBURY, ID. MISSOURI DIV. OF RESOURCES & DEV. 61 ARROY—ARR
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ARROY—BASE OUT AGENCY MILWAUREE DUSTLESS BRUSH CO. 1981 MILWAUREE ART. AGE, ARROY INC. MILWAUREE ART. AGENCY INC. MILWAUREE ART. AGENCY INC. MILWAUREE ART. AGENCY INC. AGENCY—FOOTE, CORE & BEIDING INC. AGENCY—FOOTE, CORE & BEIDING INC. MINNESOTA MINING & MFG. CO. 100 AGENCY—HEATHAM & RYSH. INC. MISSION PAK AGROCY—BLAINEY PHARM ASSOC. 148 AGENCY—FOLIS-WOODERLY INC. AGENCY—FOLIS-WOODERLY INC. AGENCY—FOLIS-WOODERLY INC. AGENCY—TO GRISWOOD EABLEMAN CO. MULTIPLE DISPLAY FIXTURE CO. 191 AGENCY—TO GRISWOOD EABLEMAN CO. 100 AGENCY—ACTURE B. MORGE, INC. AGENCY—ACTURE B. MORGE, INC. AGENCY—ACTURE AGENCY—ACTURE CO. 130 AGENCY—MICKADN ERICKSON, INS. MATIONAL CASH REGISTER CO. 130 AGENCY—MICKADN ERICKSON, INS. MATIONAL STANDARD CO. 100
ARROY—BASE OUT AGENCY MILWAUREE DUSTLESS BRUSH CO. 1981 MILWAUREE ART. AGE, ARROY INC. MILWAUREE ART. AGENCY INC. MILWAUREE ART. AGENCY INC. MILWAUREE ART. AGENCY INC. AGENCY—FOOTE, CORE & BEIDING INC. AGENCY—FOOTE, CORE & BEIDING INC. MINNESOTA MINING & MFG. CO. 100 AGENCY—HEATHAM & RYSH. INC. MISSION PAK AGROCY—BLAINEY PHARM ASSOC. 148 AGENCY—FOLIS-WOODERLY INC. AGENCY—FOLIS-WOODERLY INC. AGENCY—FOLIS-WOODERLY INC. AGENCY—TO GRISWOOD EABLEMAN CO. MULTIPLE DISPLAY FIXTURE CO. 191 AGENCY—TO GRISWOOD EABLEMAN CO. 100 AGENCY—ACTURE B. MORGE, INC. AGENCY—ACTURE B. MORGE, INC. AGENCY—ACTURE AGENCY—ACTURE CO. 130 AGENCY—MICKADN ERICKSON, INS. MATIONAL CASH REGISTER CO. 130 AGENCY—MICKADN ERICKSON, INS. MATIONAL STANDARD CO. 100
ARROY—BASE OUT AGENCY MILWAUREE DUSTLESS BRUSH CO. 1981 MILWAUREE ART. AGE, ARROY INC. MILWAUREE ART. AGENCY INC. MILWAUREE ART. AGENCY INC. MILWAUREE ART. AGENCY INC. AGENCY—FOOTE, CORE & BEIDING INC. AGENCY—FOOTE, CORE & BEIDING INC. MINNESOTA MINING & MFG. CO. 100 AGENCY—HEATHAM & RYSH. INC. MISSION PAK AGROCY—BLAINEY PHARM ASSOC. 148 AGENCY—FOLIS-WOODERLY INC. AGENCY—FOLIS-WOODERLY INC. AGENCY—FOLIS-WOODERLY INC. AGENCY—TO GRISWOOD EABLEMAN CO. MULTIPLE DISPLAY FIXTURE CO. 191 AGENCY—TO GRISWOOD EABLEMAN CO. 100 AGENCY—ACTURE B. MORGE, INC. AGENCY—ACTURE B. MORGE, INC. AGENCY—ACTURE AGENCY—ACTURE CO. 130 AGENCY—MICKADN ERICKSON, INS. MATIONAL CASH REGISTER CO. 130 AGENCY—MICKADN ERICKSON, INS. MATIONAL STANDARD CO. 100
ARROY—BASE OUT AGENCY MILWAUREE DUSTLESS BRUSH CO. 1981 MILWAUREE ART. AGE, ARROY INC. MILWAUREE ART. AGENCY INC. MILWAUREE ART. AGENCY INC. MILWAUREE ART. AGENCY INC. AGENCY—FOOTE, CORE & BEIDING INC. AGENCY—FOOTE, CORE & BEIDING INC. MINNESOTA MINING & MFG. CO. 100 AGENCY—HEATHAM & RYSH. INC. MISSION PAK AGROCY—BLAINEY PHARM ASSOC. 148 AGENCY—FOLIS-WOODERLY INC. AGENCY—FOLIS-WOODERLY INC. AGENCY—FOLIS-WOODERLY INC. AGENCY—TO GRISWOOD EABLEMAN CO. MULTIPLE DISPLAY FIXTURE CO. 191 AGENCY—TO GRISWOOD EABLEMAN CO. 100 AGENCY—ACTURE B. MORGE, INC. AGENCY—ACTURE B. MORGE, INC. AGENCY—ACTURE AGENCY—ACTURE CO. 130 AGENCY—MICKADN ERICKSON, INS. MATIONAL CASH REGISTER CO. 130 AGENCY—MICKADN ERICKSON, INS. MATIONAL STANDARD CO. 100
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Agency-Foote, Cone & Bedding MINESOURI DAY, Agency-Inc. MINESOURI DAY, Agency-Inc. MINESOURI DAY, Agency-Inc. MINESOURI DAY, AGENCY INC. MINESOURI DAY, AGENCY INC. MINESOURI DAY, AGENCY INC. MISSOURI DAY, AGENCY INC. MISSOURI DAY, AGENCY DAY, AGENCY DAY, AGENCY-DAY, WORLD TO AGENCY DAY, AGENCY-DAY, WORLD TO AGENCY DAY, AGENCY-DAY, AGENCY-DA
MILWAPE AND TILES BUSH CO. MILWAPE I BOTA ES BUSH CO. MINNEST AND THE SECRET BE. MINNEST AND THE SECRET BE. MINNEST A MINING A MFG. CO. AGENCY—FOOTE, CORE & Belding MINNEST A MINING A MFG. CO. S. AGENCY—MACMARDO, John & Adams, Inc. MINNEST A MINING A MFG. CO. MINING A MINING A MFG. CO. MINING A MINING A MFG. CO. MINING A MINING A MINING A MFG. CO. MINING A MINING
MILWAPE AND TILES BUSH CO. MILWAPE I BOTA ES BUSH CO. MINNEST AND THE SECRET BE. MINNEST AND THE SECRET BE. MINNEST A MINING A MFG. CO. AGENCY—FOOTE, CORE & Belding MINNEST A MINING A MFG. CO. S. AGENCY—MACMARDO, John & Adams, Inc. MINNEST A MINING A MFG. CO. MINING A MINING A MFG. CO. MINING A MINING A MFG. CO. MINING A MINING A MINING A MFG. CO. MINING A MINING
Agency—Al Horr Ade Agency Inc. MINEAPOLIS HONEY WELL REGULATOR CO. Agency—Foote, Cone & Bedding MINNESOTA MINING & MFG. CO
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REVOLVATOR CO.	181
REYNOLDS METALS CO	191
Agency-Clinton E. Frank, Inc.	190
REVOLVATOR CO. Agency—Fredericks & Co., Eng. REVNOLDS METALS CO. Agency—Clinton E. Frank, Inc. REZNOR MFG. CO. Agency—Kight Adv., Inc. ROBBINS & MYERS, INC. Agency—Weber, Geiger & Kalat, Inc. ROGKWELL MFG. CO. Agency—Marsteller, Rickard, Gebhardt & Agency—Marsteller, Rickard, Gebhardt &	20.2
Agency-Weber, Gelger & Kalat, Inc.	444
Agency-Marsteller, Rickard, Gebhardt &	Beed.
ROTARY LIFT CO	111
Agency-Greenhaw & Rush, Inc.	
INDUSTRIES, INC.	[4]
IOSEPH T. RYERSON & SON, INC	94
ROTARY LIFT CO. Assocy—Greenbaw & Rush, Inc. HUBATER, DIX OF GREAT AMERICAN ASSOCY—HOUSE & CO. LOSEPH T. HYERSON & SON, INC. ASSOCY—THE BURGEN CO. AN BERNARDING COUNTY BOARD OF TRADE ASSOCY—C. B. Juneau, Inc.	
Agency C B Juneau Inc	180
THE SCHELL LEATHER GOODS CO	154
SCHENLEY INDUSTRIES, INC 3rd	Caver
SCOTT PAPER CO	116
Agency-Ketchum, MacLeod & Grove, Inc.	190
Agency-The Bayless-Kerr Co.	00.00
Agency-Klau-Van Pletersom-Dualap, Inc.	20-2/
Azency-Compton Adv., Inc.	16-17
Agency Farson Huff & Northlish Inc.	184
STERLING ALDERFER CO	195
STROMBERG-CARLSON	28
THE STURGIS POSTURE CHAIR CO	91
Agency-Blaco Adv. Agency S. G. TAYLOR CHAIN CO. INC.	(86
Agency-Jones & Taylor & Assoc.	124
ADERICA-THE BILLORD CO. AN BERBARDING COUNTY BOARD OF AN BERBARDING COUNTY BOARD OF APPEC'S. B. JUDESH, Inc. BHAW-BARTON, INC. APPEC'S. B. JUDESH, INC. BHAW-BARTON, INC. APPEC'S. B. JUDESH, INC. BOOCHY MOBIL OIL CO. INC. STELLING, INC. STELLING, INC. APPEC'S. B. JUDESH, INC. APPEC'S. B. JUDE	Inc.
Agency - Rosell & Jacobs, Inc. THIOKOL CHEMICAL CORP.	
Agency Kelly Nason, Inc.	93
Agency-The Henry P. Boyston Adv. Agency	. 32
Agency—Relly Nason, Inc. THE TREMCO MFG. CO. Agency—The Henry P. Boynton Adv. Agency TUSE TURNS Agency—The Agency—The Griswold-Eshleman Co.	164
Agency—The Griswold-Enhieman Co. UNION BARGE LINE CORP. Agency—Ketchun, MacLeod & Grove, Inc. UNITED AIR LINES Agency—N. W. Aver & Bon, Inc. U. S. SYEEL CORP.	10
UNITED AIR LINES	87
U. S. STEEL CORP.	146
U. S. STEEL CORP. Agency—Batten, Barton, Durstine & Osborn VEEDER-ROOT, INC.	Inc.
Agency-Sutherland Abbott WAGNER ELECTRIC CORP.	191
Agency - Batten, Barton, Durstine & Osborn VEEDER, ROOT, INC. Agency - Sutherland, Abbott WAGNER ELECTRIC CORP. Agency - Arthur H. Mosge, Inc. WARNER & SWASEY CO.	
Agency—The Griswold-Eshleman Co.	10
Agency—Ellington & Co. Inc.	171
WEST PENN ELECTRIC SYSTEM	. ,200
Arency—Arthur R. Mongo, Inc. WARNER & SWASEY G. Arency—The Grievoid-Enhiman Co. MELLINGTON SEARS CO. ARENCY—Ellington & Co. ARENCY—Ellington & Co. ARENCY—Ellington & Co. ARENCY—Aller ELECTRIC SWSTEM ASSECT—Albert Frank-Guenther Law, Inc. WESTINGHOUSE ELECTRIC CORP. (LAMP DIV.) ARENCY—MCSann-Erickson, Inc.	
Agency—McCann-Erickson, Inc.	
(ELEVATOR DIV.)	107
(LAMP DIV.) Agency—McCann-Erickson, Inc. WSSTINGHOUSE ELECTRIC CORP. (ELEVATOR DIV.) Asency—Fuller & Smith & Ross, Inc. WESTINGHOUSE ELECTRIC CORP. Asency—McCann-Erickson, Inc. WHEELABRATOR CORP. Agency—The Janua Co. WHEELING STEEL CORP. Agency—Chunincham & Waish, Inc. WHITHING-PLOYER PAPER CO.	. 14
Agency-McCann-Erickson, Inc.	188
Amoncy—The Jacua Co.	
Agency—Cunningham & Walsh, Inc.	. 56
WHITING-PLOVER PAPER CO	182

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Soviets Put Their Challenge Into Words

This is hardly the time to gloat over possible Soviet miscalculations—not after the way the U.S. has slipped up in the missile race and, perhaps, in the Middle East. Even so, it appears that Nikita Khrushchev did himself no good in giving his extended interview to James Reston of the New York Times. For self exposure of the power-mad dictator, there has been nothing to match it since Hitler's "Mein Kampf."

Almost everything is there, including the hysterical tone that the Fuehrer used when anybody stood in the way of an immediate goal. In Khrushchev's case, it is our mere presence in the Middle East that sends up his blood pressure. Khrushchev has the same brazen way of turning the truth upside down, and of posing as a lover of peace.

Some people, it's true, have been taken in by the Soviet dictator's glib tongue. In particular, they fell for his suggestion that everything would be just ducky in Soviet-American relations if only Secy. of State Dulles hadn't so wickedly blocked a plan for Marshal Zhukov to visit Washington last summer. This also reminds us of Hitler and of the people—British, French, and American—who thought you could do business with him.

The Khrushchev interview isn't all bluster and bluff. The Soviet party boss put a lot of stress on his post-Sputnik terms for a deal with the U.S. This is what makes it such a give-away.

From the U.S., Khrushchev wants (1) full recognition of all existing Communist states; (2) acceptance of the U.S.S.R. as the protector of the Middle East; and (3) agreement to the disarmament and neutralization of West Germany. In return, he suggests that Moscow will consider an arms control deal and will generously recognize the right of the U.S., Britain, France, and a few other nations to maintain their capitalist systems. In short, this is a prescription for Soviet control of Europe and Asia, if not the entire world.

Khrushchev's terms are offensive. His whole interview is as much of a challenge to this country as Sputnik itself. That challenge will not go unheeded by the American people once the Administration gets the blinkers off its eyes and faces the world as it is. Pres. Eisenhower should have no trouble then in getting this country aroused to the Soviet danger and in getting public support for whatever measures are needed to insure the nation's security.

There is no reason for the Administration to wait for another blow to hit us in the Middle East, or to wait for trouble in Berlin, the most vulnerable of American outposts. What we face, quite clearly, is an even tougher struggle with Soviet Communism than we have known before, instead of the more relaxed competition the Administration has been hoping for.

The struggle that Khrushchev is asking for may be long and scary. It may cost so much in defense spending that it really hurts. But once the issue is made plain, the vast majority of Americans will prefer to pay any price rather than settle for Khrushchev's terms.

This nation has achieved stupendous feats of greatness in the past when it has had strong leadership and when its vital material interests and its cherished moral principles have been challenged. Very soon now Eisenhower should be letting Khrushchev know that the nation can do it again.

The Next Step

It will soon be known whether the AFL-CIO was bluffing when it said in effect that the Teamsters union could not remain in the house of labor under the corrupt leadership of James R. Hoffa. Already some members of AFL-CIO's executive council—the federation's high command—profess to see in the specious constitutional changes voted by the Teamsters' convention enough of a gesture toward reform to merit "another chance." Maurice Hucheson, president of the 800,000-member carpenters union, has declared so publicly.

But if the AFL-CIO doesn't follow through on its threat, regardless of the consequences in loss of revenue, loss of solidarity, and jurisdictional trouble, it will be filing a petition for moral bankruptcy. The nefarious Hoffa machine is in full control of the country's largest labor union. Its symbolic concessions toward clean unionism are egregious window dressing. We would hope they fooled nobody. For the federation to accept them as genuine would be willing collusion in a fraud.

The Unloved Ones

New York's Brooklyn Museum is stuck with an unwanted Egyptian mummy and doesn't know how to get rid of it. Too young to exhibit (it dates back only to 300 A. D.), the mummy can't be buried without a burial permit or shipped without a death certificate. And the moral scruples of the curators won't let them destroy it.

We'll be very much interested in any solution that the museum works out. It is our observation that many, if not most, business personnel managers around the country are faced with precisely the same problem. If the museum can find an answer, it will, as the saying goes, fill a long-felt need.



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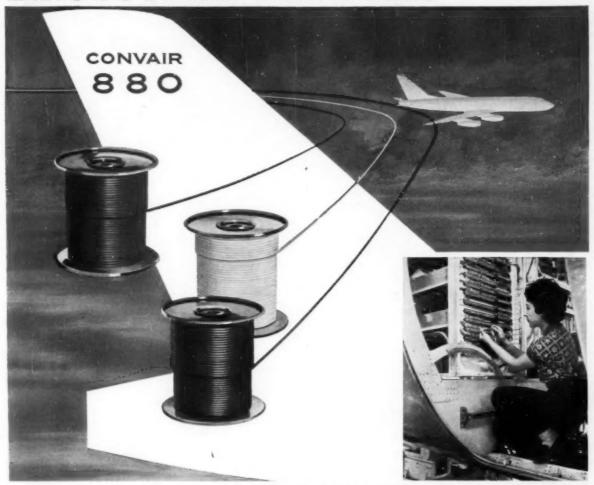


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